

PAPER PUBLICATIONS

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Index-Scopus

1) **Comparison of balance between auditory impaired, visually impaired and healthy elderly individuals using posturography**

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Abstract

Introduction: Fall is a major risk of accidental death for people over 65 years of age.

The postural control is aided by interaction of sensory systems which are visual, vestibular and somatosensory systems. The age-related impairments in sensory systems in elderly may have affection of visual and auditory function, which could influence balance. Thus, this study was conducted to compare the balance between visually and auditory impaired elderly individuals.

Methodology: Cross Sectional Analytical Study; Individuals were divided into 3 groups as per inclusion and exclusion criteria and were assessed on posturography and balance was compared

Results: There was highly significant ($p < 0.001$) difference in the balance of all 3 groups.

Conclusion: Balance is more affected in visually impaired individuals than auditory impaired and healthy individuals.

Key words: falls, balance, auditory impairment, visual impairment, elderly



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Influence of Vascular Territory and Socioeconomic Status on Barriers in Physical Activity Using the Barriers to Physical Activity After Stroke Scale (BAPAS) in 40-60 Years of Stroke Patients: A Cross Sectional Study

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ABSTRACT

The impairments caused by MCA, PCA and ACA involvement may be different but its effect on activities of daily living and on functional capacity of the patients is same, because while performing any activity or function the coordination of the entire body plays an important role.

Also, even though patients with low socioeconomic status face various physical, financial problems which may intensify stroke factors like severity, mortality, recurrence or increase hospital stay and lack proper healthcare facilities; personal motivators like family support can prove beneficial for stroke recovery.

The barriers to physical activities can be divided into personal and environmental barriers.

The study was conducted to analyse influence of vascular territory and socioeconomic status on barriers in physical activity in stroke patients.

Subjects were selected based on inclusion and exclusion criteria.

Subjects were assessed using Barriers to Physical Activity Scale (BAPAS) and Modified Kuppaswamy scale was used to assess socioeconomic status.

Scores were noted for the BAPAS scale.

Data analysis was done using Kruskal Wallis test by using SPSS software.

The results stated that there was no difference between the vascular territory and socioeconomic status on barriers to physical activity.

Thus, this study concluded that there was no correlation between vascular territory and barriers to physical activity or between socioeconomic status and barriers to physical activity.

Key words: Stroke, vascular territory, socioeconomic status, barriers to physical activity

INTRODUCTION

Stroke is an episode of acute neurological dysfunction presumed to be caused by ischemia or haemorrhage, persisting ≥ 24 hours or until death.(1) Ischemic stroke is caused by focal cerebral infarction in a defined vascular distribution. Haemorrhagic stroke occurs either due to intracerebral

collection of blood or bleeding into the subarachnoid space. (1)

The currently recognized causes for ischemic stroke are embolism, decreased perfusion and thrombosis. Large arteries commonly affected by atherosclerotic plaque lesions are carotid, middle cerebral, vertebral and basilar arteries. Stenosis in these arteries when more than 70% is



3) Predicting Falls in Healthy Elderly: A Comparison between Unified Balance Scale versus Four-Square Step Test

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ABSTRACT

Background: Falls is a major incidence in elderly life and its sequence may be a major cause of mortality. Falls can be predicted and thus prevented. Screening scales are either a brief one component balance or more composite multifactorial assessment. Four Square Step test is an easy, less time consuming, versus Unified Balance scale which is multi domain. The present study was intended to see which of the two scales could accurately predict adults who were at risk of falls. Thus, helping therapist perform a single test to screen them and give them targeted treatment.

Method: 80 Healthy elderly above the age of 60 years were included in the study. Fall history was noted post which Four Square Step test and Unified Balance Scale was administered in sequence. Data Analysis was done, and sensitivities and specificities were calculated.

Result: Statistical Analysis was done by plotting the contingency table and plotting the Receiver Operating Curve. The Unified Balance Scale had a better combination of sensitivity and specificity than Four Square step test.

Conclusion: Unified Balance scale is better than Four-Square step test in predicting falls in healthy elderly.

Keywords: Elderly, Fall-Risk, Screening, Four Square Step Test, Unified Balance Scale, Prediction.

INTRODUCTION

Aging refers to progressive weakening of the different physical, mental psychosocial systems of the body.^[1,2] WHO defines Healthy Ageing "As the process of developing and maintaining the functional ability that enables wellbeing in older age".^[3]

In India, any person who is or above the age of 60 can be referred to as an elderly.^[2,3]

There will be an exponential increase in the population of elderly in the next 50 years. Leading to an increase in the number of active adults these active adults encounter more challenging situation in daily life owing to the fact that they retire

late in the life. With the increasing challenges, they are at more risk for falls.

In general falls are a major incidence in an elderly life and hence its sequelae have a major effect on their daily living.^[3]

A fall can be defined as "an unexpected event, in which the participant comes to rest on the ground, floor, or lower level" and "excludes coming to rest against furniture, wall, or other structure".^[4,5,6]

In India, the prevalence of falls was 14% to 53% among individuals aged 60 years and Older.^[3] Falls cause a large number of injuries which leads to an increase in mortality and morbidity. Hence, high-risk individuals should be correctly identified, using screening measures for



Effect of sleep on novel motor task learning In Elderly individuals

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ABSTRACT

Purpose and objective:

To study the effect of sleep on novel motor task learning in elderly individuals.

Method:

68 elderly were divided randomly into Sleep group and No sleep group. Evaluation was done using Star excursion balance test (SEBT), Tandem walk test (TWT) and Dynamic Gait Index (DGI) before session. Sleep group subjects practiced novel task in evening at 8 pm and underwent retention testing next morning at 8 am. While in no sleep group they practiced the novel task in morning 8 am and underwent retention testing same day in evening at 8 pm. Novel task included 30 mins session of 3 virtual reality based games. Both groups were then analyzed using Wilcoxon Signed Rank W test within the group and Mann-Whitney U test between the two groups.

Outcome measures:

Primary outcome measures were SEBT, TWT and DGI. Secondary outcome was considered as Stanford Sleepiness Scale before the session.

Results:

Older adults in sleep group ($n=32$) showed increased performance in SEBT and step length, stride length components of TWT ($p<0.05$) as compared to no sleep group ($p>0.23$). However, participants in both groups showed improvement in base of support component of TWT- [sleep group ($p<0.05$) with (%change-38%) and no sleep group ($p=0.08$) with (%change-5.8%)]. DGI score also improved in both sleep group ($p<0.05$) with (%change-16.4%) and no sleep group ($p<0.05$) with (%change-7.1%). Hence, effect seen in group A was more than in group B ($p<0.05$)

Discussion: Present study demonstrates that older adults were able to perform novel tasks better after a night of sleep as compared to older adults who didn't sleep. It suggests that Sleep dependent offline learning can be applied to both simple and complex tasks. Offline learning refers to memory consolidation which takes place without any active participation of subject itself. It is described in terms with interference technique in which the consolidation of a primary task is disrupted by the immediate performance of a secondary task. If the period is lengthened then the extent of learning is lengthened as well. Also, it is found that there is a positive



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Assessment Of Balance In Individuals With And Without Motion Sickness: A Comparative Study

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Abstract

Introduction: This vestibular malfunction leads to symptoms from dizziness, orientation problems and postural disequilibrium to the distressing visual symptoms of vertigo (an illusion of rotatory motion) and nystagmus during activities that require head movement suggesting that vestibular disorders markedly disrupt

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6 Assessing the Impact of COVID-19 Lockdown on Physical Activity and Psychological Status in Individuals of Various Age Groups Using Google Forms

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ABSTRACT

Introduction: Covid-19 pandemic has been a sudden jolt to mankind. Lockdown following it has caused major changes in everyday life. It has affected physical activity, psychological makeup and has brought everyone to a 'new normal' lifestyle.

Hence this study was attempted to find out the impact of lock down on physical activity and psychological status during lock down.

Aim: To assess the impact of Covid-19 lockdown period on physical activity and psychological status in individuals with various age groups.

Materials and methods: Data collection was carried out using Google forms. Descriptive statistics was used to analyse the data.

Results: During lockdown, working hours were reduced for 66.66% individuals. Physical activity was increased for around 33.33% individuals whereas was increased in 43.57% individuals and remained same for rest of the individuals. Considering psychological status there was an increase of more than 10-20% in number of individuals who had increase in frequency of emotions who had developed increased level of feeling guilty, sad or irritable.

Conclusion: Lockdown had a major impact on psychological status of individuals whereas less severe impact on physical activity of individuals.

Key words: lock down, psychology, physical activity.

INTRODUCTION

The Coronavirus disease 2019 (COVID-19), caused by a novel corona virus has caused a pandemic worldwide. Due to lack of pharmacological cure or vaccine, social measures are essential to contain the spread of the virus. The common strategies used are social distancing, isolation, quarantine, lockdowns and curfews. A Cochrane systematic review concluded that quarantine, combined with other measures, such as school closures, travel restrictions and social distancing might reduce the number of COVID-19 infections and deaths¹. There is evidence which supports this².

According to a BBC report, dated 07.04.2020 over 100 countries worldwide have implemented full or partial lockdown measures as of late March, affecting a large number of population³.

Even though these public health measures like social distancing, lockdown are essential it may have an impact on psychological status of the patient. Symptoms include emotional disturbance, depression, stress, low mood, irritability, insomnia, post-traumatic stress symptoms and anxiety⁴.

Regular physical activity has shown to reduce morbidity and mortality rates, increased quality of life and independence in old age⁵. Physical fitness can also help to

Correlation between Postural Sway and Dynamic Balance in Patients with Diabetic Neuropathy

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ABSTRACT

Aim and objectives of the study-To study and find out the correlation between postural sway and dynamic balance in diabetic neuropathy patients.

Method – Total 145 individuals were screened for MNSI and the individual who fulfilled the inclusion and exclusion criteria were included in the study according to the sample size, 60 patients were selected. Postural sway was assessed by Modified Clinical Test of Sensory Interaction on Balance (mCTSIB) test of posturography by balance master and Dynamic balance was assessed by Dynamic Gait Index (DGI). Data was recorded and then analyzed with Spearman's correlation coefficient test.

Outcome measures: MNSI questionnaire, Modified Clinical Test of Sensory Interaction on Balance, Dynamic Gait Index

Results- The correlation between postural sway in 4 different situations (eyes open and eyes closed on firm surface and foam surface) and dynamic balance was correlated. The correlation of postural sway (eyes open firm surface) and the total score of DGI showed statistically significant negative correlation. But the correlation coefficient indicated low negative correlation with r value of -0.312. The correlation of postural sway (firm surface eyes closed) and the total score of DGI showed statistically significant negative correlation. But the correlation coefficient indicated low negative correlation with r value of -0.44. The correlation of postural sway (eyes open foam surface) and the total score of DGI showed statistically significant negative correlation. But the correlation coefficient indicated low negative correlation with r value of -0.317. The correlation of postural sway (foam surface eyes closed) and total score of DGI Statistically showed no significance.

Conclusion- There is no correlation between postural sway and dynamic balance in diabetic neuropathy patients.

Discussion- In the present study, which was done to correlate postural sway and dynamic balance in diabetic neuropathy patients. A weak negative correlation was found between postural sway on firm surface (EO), (EC), foam surface (EO) and dynamic balance in diabetic neuropathy patients and no correlation was found between postural sway on foam surface (EC) and dynamic balance in diabetic neuropathy patients.

Keywords- Postural sway, Dynamic balance, Diabetic neuropathy.

INTRODUCTION

Diabetes mellitus is fast gaining and one of the most common metabolic and chronic disorders across the world. Globally there were 366 million people affected with diabetes in 2011 and it is expected that it

will rise to 552 million by 2030¹. Diabetic neuropathy (DN) is the common and most frequent complication of diabetes mellitus and the incidence increasing with the duration of diabetes².



Joshi



Efficacy of Four Square Step Test and Modified Dynamic Gait Index to Predict the Falls in Parkinson's Disease: A Comparative Study

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ABSTRACT

Introduction: This study evaluated the efficacy of Four square step test (FSST) and modified dynamic gait index (mDGI) in patients with Parkinson's disease to evaluate balance. In this study 50 individuals with Parkinson's disease were assessed according to Hoehn Yahr scale (grades between 1 to 3), were subjected to FSST and mDGI.

Results: FSST and mDGI scores were taken of the same patient, and sensitivity and specificity were also calculated. Both these scales show a highly significant negative correlation with each other ($r = -0.86$, $P < 0.001$)

Conclusion: Thus the study concluded that both FSST and MDGI are equally effective for evaluating balance in individuals with Parkinson's disease.

Key Words: Sensitivity, Specificity, Balance, Parkinson's disease

INTRODUCTION

Parkinson's disease (PD) is a progressive disorder characterized by various motor and non-motor features that can impact on function a variable degree. The four cardinal features of PD that can be under the acronym TRAP: Tremor at rest, rigidity, Akinesia (or bradykinesia) and Postural instability. In addition, flexed posture and freezing (motor blocks) are classic features of parkinsonism, with PD as the most common form.¹

The symptoms of PD begin insidiously and worsen gradually. Rest tremor is often the first symptom recognized by the patient. But sometimes it begins with bradykinesia; and in some patients, tremor may never develop. Bradykinesia manifests as slowness, such as slower and smaller handwriting, decreased arm swing and leg stride when walking, decreased facial expression, and decreased amplitude of voice.

Rest tremor can be intermittent at the beginning, might be present only in stressful situations; eventually it tends to be present most of the time and got worsens in amplitude with stress or excitement.² There is a continuous worsening of symptoms over time; and if it remains untreated then those symptoms may lead to disability with severe immobility and falling tendency may increase. The early symptoms and signs of PD that is rest tremor, bradykinesia, and rigidity are related to progressive loss of nigrostriatal dopamine.¹ These signs and symptoms result from striatal dopamine deficiency and are usually correctable by levodopa and dopamine agonists. As PD progresses over time, symptoms that do not respond to levodopa develop, such as flexed posture, the freezing phenomenon, and loss of postural reflexes; these are often referred to as non-dopamine-related features of PD. Moreover, bradykinesia that responded to levodopa in the early stage of PD increases as the disease worsens

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Presence of Vestibular Dysfunction in Individuals with Motion Sickness

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Abstract

Aim and Objective: To study if there is vestibular dysfunction in individuals with motion sickness.

Type of Study: Correlation study.

Study population: Motion sickness individuals from age 20-40 years and fulfilling the inclusion criteria were approached from the community for the study. Interested individuals were asked to fill the motion sickness questionnaire for the information about the symptoms. Vestibular function clinical tests like Dynamic Visual Acuity [DVA], Modified clinical test of sensory interaction on balance (MCTSIB) and Head Thrust test were used to assess vestibular dysfunction in these individuals.

Results were obtained using spearman's correlation analysis.

Results and Conclusion: There is a strong correlation between motion sickness and vestibular dysfunction. ($r=0.951, p<0.0001$)

Keywords: Motion sickness; Vestibular dysfunction; MCTSIB; DVA; Head thrust

Introduction

Motion sickness (MS) is a syndrome which is produced by the response to a perceived motion which involves various autonomic nervous system symptoms of nausea, cold, sweating, paleness, and vomiting in susceptible persons.

Other frequently experienced symptoms include headache, drowsiness, sleepiness, apathy, depression, and a reduction in cognitive function, reflected by reduced performance on various psychomotor tasks.

Most common types of Motion Sickness are:

- Car sickness
- Sea sickness
- Vehicle simulator sickness, and space sickness [1]

As the time spent on transport systems occupies a considerable part of daily life, travellers normally perform a variety of activities while being transported, leading to various active head movements during passive motion. However, motion sickness can be provoked or aggravated by active head movements in the presence of passive motion, considerably hindering the quality of travel [2]. Normal activities of daily life (such as running) can have head velocities of up to $550^\circ/s$, head accelerations of up to $6,000^\circ/s^2$, and frequency content of head motion from 0 to 2 Hz. Only the vestibular system can detect head motion over this range of velocity, acceleration, and frequency. Additionally, the latency of the vestibulo-ocular reflex (VOR) has been reported to be as short as 5 to 7 milliseconds. In contrast, ocular following mechanisms such as smooth pursuit, generate slower eye velocities ($\sim 60^\circ/s$) and have relatively long latencies (up to 100 milliseconds) [3].

The various physiological correlates of Motion sickness that have been investigated in the past, are alterations in heart rate and respiratory rate variability [4,5] plasma hormonal changes [6], salivary secretion and personality factors [7], changes in gastric motility [8], and the saccular reflex [9]. However, neither physiological nor functional variables have been found to be of sufficient sensitivity and specificity to act as a single diagnostic measurement for motion sickness susceptibility. In absence of the motion-sensing organs of the inner ear, motion sickness

does not occur. This condition suggests that the inner ear is critical for development of motion sickness. The reactions of dogs to emetic drugs is greatly reduced or absent after they have been labyrinthectomized compared with their baseline responses.

There are large individual differences with respect to susceptibility to motion sickness. The incidence of motion sickness varies, depending on the intensity of the stimulus and the susceptibility of the individual. The cause of motion sickness is unknown, but MS is generally produced by environmental challenges such as linear and/or angular accelerations. Many studies have been done to establish the cause and objective criteria for diagnosing and evaluating motion sickness [1].

Prevalence of motion sickness among north east Indians was 28% and 26% among northwest Indians. Generally speaking, females 27.3% were more susceptible than males 16.8%. According to the national travel survey of 1000 men and women, 63% report of motion sickness. Nearly 60% of astronauts report experiencing motion sickness, approximately, 30% of ocean liner passengers and nearly 40% of flight.

The range of vulnerability in the normal population varies about 10,000 to 1.

Ears and eyes are the most potent receptors of provocative motion that causes sickness [10].

Various theories on motion sickness have been put forward but none of them justifies the exact cause for motion sickness. The theories include the evolutionary theory holds that motion sickness is essentially a response to poisoning. The notion is that when a noxious substance is ingested (e.g. rotting flesh) if nausea and vomiting result, inactivity will be induced and symptoms will be attenuated because of reduced levels

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EFFECT OF PHYSICAL PRACTICE AND MENTAL PRACTICE VERSUS PHYSICAL PRACTICE ON DORSIFLEXORS IN IMPROVING BALANCE IN SUB-ACUTE STROKE PATIENTS: A COMPARATIVE STUDY

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ABSTRACT

Balance is a common impairment in individuals with stroke. Impaired balance can lead to falls. Hence an intervention is needed to accelerate improvement in balance.

Aim: of this study was to compare the combined effect of mental practice along with physical practice and only that of physical practice in stroke patients. In this study 32 stroke patients divided into two groups i.e. conventional and experimental. Subjects were screened for balance using modified dynamic gait index, voluntary control and functional reach test. Outcome measures were evaluated prior to the interventions and after 20 sessions. The conventional group was given treatment in the form of exercise only. The experimental group was given mental practice in the form of Mentamove therapy along with exercises. The intervention was given for 20 sessions and at the end of intervention, outcome measures were evaluated again.

Results: There was significant improvement seen after intervention in both the groups on all the outcomes. There was no significant difference in the balance improvement in both the groups on all the outcomes.

Conclusion: It was concluded that physical practice and the combination of physical and mental practice both groups showed improve in balance in stroke patients.

KEYWORDS : balance, m DGI, Mental Practice, Forward reach test

INTRODUCTION

"Stroke" is a functional activity limiting disorder. The brain damage caused by a stroke may result in the loss of cerebral function.¹

Majority of stroke survivors continue to live with disabilities and the costs of ongoing rehabilitation and long term-care are largely undertaken by family members which impoverish their families. The incidence rate is 119-145 per 100,000 based on the recent population based studies.²

In stroke, along with other focal deficits, there are balance abnormalities which lead to increased risk of fall.³

As in stroke patients because of spasticity & tightness of tendo achilles, dorsiflexor weakness affect ankle strategy. Gait deficits include reduced propulsion at push-off, decreased hip and knee flexion during the swing phase, and reduced stability during the stance phase. This leads to impaired balance in stroke patients and increases high risk of falls.

It has been established that, stroke patients present with more postural sway, asymmetric weight distribution, impaired weight-shifting ability and decreased stability capability.⁴ This will increase more dependency on care takers. Correcting these factors may help us to enhance balance and prevent falls in hemiplegic individuals.

Thus, the area needs more attention and exploration from physical therapists.

The term "Plasticity" refers to the capacity of the CNS to adapt to functional demands and therefore to the system's capacity to reorganize. Results suggest that specific training to induce motor learning can shape subsequent reorganization in the undamaged motor cortex and that this may play an important part in functional recovery.⁵ Learning new motor skills with an intact Central Nervous System (CNS) and regaining skill after a lesion of the CNS are similar in many aspects. Many repetitions are required for an individual to become skilled in a complex motor task. Repetition of movements that are too easy or of a non-meaningful task is insufficient to produce long-term neural reorganization.⁶

Mental practice (MP), also known as "Mental Imagery," is a technique by which physical skills can be cognitively rehearsed in a safe, repetitive manner.⁷ It has been effective in enhancing motor performance, specifically in sport, dance and music.⁸

Even a case study conducted on post stroke patient showed that there is increase in gait speed and knee range of motion.

Mentamove is the device, which is highly sensitive electromyography

initiated muscle stimulator Mentamove uses mental practice of motor skills.⁹ It is an extension of mental imagery, in that, it combines the psychological aspect of generating the mental image with feedback from the performance of the physical skill.¹⁰

In order to accelerate balance improvement, this study was designed to compare effect of physical practice with mental practice and physical practice on dorsiflexors to improve balance in sub-acute stroke patients.

EXPERIMENTAL HYPOTHESIS

There will be difference between the effect of only physical practice and combination of physical & mental practice in improving balance.

AIM

To compare the effect of physical and mental practice versus only physical practice on dorsiflexors to improve balance

OBJECTIVES

1. To assess the effect of physical practice on dorsiflexors to improve balance.
2. To assess the effect of physical and mental practice on dorsiflexors to improve balance.
3. To compare the effect of physical and mental practice and only physical practice in improving balance.

MATERIALS AND METHODOLOGY

TYPE OF STUDY: Experimental design

STUDY POPULATION: Individuals with stroke

INCLUSION CRITERIA:

1. Subacute stroke (>1 month, <2 year)
2. Patient should be able to complete 6.1 meters walk distance. Walking with or without assistive device
3. Voluntary control for ankle joint 2 to 4
4. Functional reach test distance covered should be less than 15cm

EXCLUSION CRITERIA:

1. Affection in cognition, perceptual and psychiatric disorders
2. Recurrent stroke
3. Visually challenged individuals
4. Any neurological disorder other than stroke
5. Severe TA contracture
6. Vestibular dysfunction
7. Symptomatic lower limb disorder

MATERIALS

- Outcome measures

Association of stroke severity with functional outcome using National Institute of Health (NIH), Functional Independence Measurement (FIM) and Stroke Specific Quality of Life (SSQOL) in stroke patients

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Abstract

Introduction: A primary concern immediately after stroke for patients, their relatives, and their caregivers is the prospect for recovery. Several prognostic factors have been identified for outcome after stroke. However, there is a need for empirically derived STUDYs that can predict outcome and assist in medical management during rehabilitation.

This study was conducted to find if assessment of stroke severity can predict functional outcome and quality of life in patients receiving rehabilitation.

Material and Methods: NIH, FIM and SSQOL scales were evaluated on day 1, at the end of 1 month and at the end of 3 months. Scores were recorded and correlated with each other. Analysis of collected data was done using spearman's correlation.

Results: There was a statistically significant correlation between NIH, FIM and SSQOL.

Conclusion: The results of the study show that there is a highly significant correlation of NIH with FIM and SSQOL. Thus, stroke severity is highly associated with functional outcome and quality of life.

Keywords: Stroke, NIH, SSQOL, FIM.

Introduction

Stroke is defined by (WHO) as a condition characterized by rapidly developing symptoms and signs of a focal brain lesion with symptoms lasting for more than 24 hours or leading to death with no apparent cause other than that of vascular origin.¹

Stroke is a third leading cause of mortality worldwide and a major cause of disability. In 2009, around 10,000 people suffered from stroke in India.² Stroke or cerebrovascular accident (CVA) is the rapid loss of brain function due to disruption in the blood supply to the brain which can be ischemic or hemorrhagic.¹

Stroke is classified by etiological categories (thrombosis, embolus or hemorrhage), specific vascular territory (ACA, MCA), so forth and management categories as (TIA) minor stroke, major stroke, deteriorating stroke and young stroke. As a result, the affected area of the brain cannot function leading to inability to understand or formulate speech, or an inability to see one side of visual field, emotional liability and motor loss. Clinically, a variety of focal deficits are possible, including changes in the level of consciousness and impairment of sensory, motor, cognitive, perceptual, language function, postural control, balance, bowel and bladder functions, abnormal tone and reflexes. In addition to physical, emotional, and social consequences the economic impact of stroke is tremendous.

The location and extent of brain injury, amount of collateral blood circulation and acute care management determine the severity of neurological deficits in a stroke patient.

Stroke can result in survival with the permanent sequelae impairing in physical, psychological, and social functions. Dependence in activities of daily life living, alteration of emotional and psychological status, and deterioration in social communication can influence the Quality of life (QOL) of patients with stroke.

Rehabilitation medicine focuses on the impact of division rather than on the disease itself, therefore disability and handicap assessment is a key element in the process of rehabilitation as stated in a book "measurement in neurological rehabilitation" where importance of rehabilitation is stressed upon while discussing assessment.³

The term measurement and assessment are used interchangeably most of the times especially when referring as tools used for collecting information. In rehabilitation, assessment refers to the process of evaluating a patient problem including recognition and measurement of problem and determining the cost and the extent. Measurement is to quantify and to determine the extent of something by comparison with a standard unit.

According to Wade there are several reasons why a patient should be assessed.

1. **Diagnosis:** Refers to understanding of whether a specific item is present or absent but also to the structures, activities and participation, which are impaired.
2. **Prognostics:** Determining who is likely to recover well and the extent to help the patient will need.
3. **Measurement:** Determining the severity of problem the change through time.



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12 Correlation between grip strength and scapular muscle

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ABSTRACT

The human hand is designed to perform various kinds of skilled movements in the daily activities. Such activities are termed as 'Prehension Activities'. Grip strength has been used to assess general strength in order to determine work capacity, to determine the extent of injury and disease processes and progress of rehabilitation. To perform distal movements it is important to have proximal joint stability. The hand being the distal component, a good grip might require adequate shoulder stability which will be dependent upon its musculature. Hence this study was conducted to find out if there exists a correlation between these two. Aim: To find out if there is a correlation between grip strength and scapular muscles Methodology: Grip strength assessment was done using dynamometer and scapular muscle strength was assessed using Micro-FET. Results: Pearson's correlation coefficient was calculated for the correlation between grip strength and scapular muscle strength Conclusion: There is the statistically significant correlation between grip strength and scapular muscle strength

Keywords: Grip Strength, Hand dynamometer, Micro FET, Scapular muscle strength

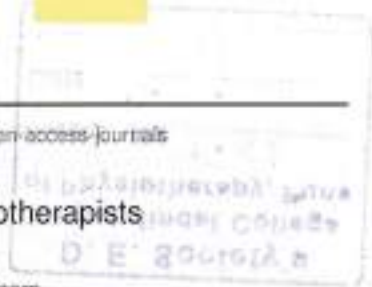
1. INTRODUCTION

The human hand is designed to perform various kinds of skilled movements in the daily activities. Such activities are termed as 'Prehension Activities'. Prehension activities of hand involve the grasping or taking hold of an object between any two surfaces of hands; the thumb participates in almost all prehension tasks. These activities can be categorized as either power grip (full hand prehension) or precision handling (finger-thumb prehension). Power grip is a forceful act which leads to flexion at all finger joints. When a thumb is used, it acts as a stabilizer to the object held between the fingers. Power grip has 4 sub-types: Cylindrical grip, Spherical grip, Hook grip, Lateral prehension. Precision handling is a skillful placement of an object between fingers and thumb. Precision handling has 3 sub-types: pad-to-pad, tip-to-tip, and tip-to-pad. Thumb is generally abducted and rotated from the palm. The fingers in a power grip usually function in concert to clamp on and hold an object into the palm. The degree of Finger flexion changes as per the size, shape, and weight of an object.

The most 'functional' type of grip within the 4 types of power grip is 'Cylindrical Grip'. It almost involves exclusive use of flexors to carry the fingers around and maintain a grasp on the object. The function in the fingers is performed largely by FDP (Flexor Digitorum Profundus) muscle especially in the dynamic closing of the fingers. In the static phase when the more powerful grip is required, the FDS (Flexor Digitorum Superficialis) assists. Along with FDP and FDS muscles, considerable interosseous muscle activity is also required. The interossei function primarily as MP (Metacarpophalangeal) joint flexors and abductors/adductors. The thumb usually comes around the object, then flexes and adducts to make a grip. The FPL and thenar muscles are also required. The activity of thenar muscles will change with a width of the web space and with the more pressure or resistance. The cylindrical grip is typically performed with the wrist in neutral /extension and slight ulnar deviation.

The hand being the distal component, a good grip might require adequate shoulder stability which will be dependent upon its musculature

Grip strength is correlated with upper extremity function and proximal stability provided by shoulder girdle. Grip strength has been used to assess general strength for determining work capacity, the extent of injury and disease processes and progress of rehabilitation. In short, grip strength is a parameter to assess the function of the upper extremity. In case of cervical region pathologies, it is very common to have a weak grip and/or weak scapular muscles. Several studies have shown a positive correlation between hand gripping activity and rotator cuff muscle activity. (1-3) Kwasniewski (4) compared bilateral rotator cuff strength in patients with a unilateral hand or wrist disorder using a hand-held dynamometer and reported a statistically significant decrease in elevated external rotation strength. Kwasniewski (4) stated that it was unclear whether there is a causal relationship. Similarly, Budoff (5) found an increased prevalence of rotator cuff weakness of the limb with an associated hand or wrist disorder. Alterations in muscle activity patterns have been seen in the presence of shoulder dysfunction (6-8). The activity of some shoulder muscles



Original Research Article

Balance in Bharatanatyam dancers and non-dancers: A comparative study

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ABSTRACT

Background and Objective: Bharatanatyam is a classical Indian dance form that traces its roots to the 2nd century and is still one of the most popular and widely practised dance forms in India. It uses a lot of movements in different stances with superimposed limb movements. There may seem to be a logical link between balance and the practice of Bharatanatyam, but the paucity of research on this topic – especially concerned with Indian classical dance, thus prompted us to conduct the research to assess and have an objective measurement of comparison of balance between Bharatanatyam dancers and age- & gender-matched non-dancers.

Materials and Methods: A sample size of 50 Bharatanatyam dancers and 50 age and gender-matched non-dancers were assessed on the Neuro-Com Balance system for 3 parameters- weight-bearing (at 0, 30, 60 and 90 degrees of knee flexion), unilateral stance and Limits of Stability.

Results and Conclusion: Bharatanatyam dancers showed decreased sway velocity in unilateral stance compared to non-dancers. They also had quicker reaction times, higher movement velocity, better end-point and maximum excursion as well as higher directional control (in the Limits of Stability test) compared to the non-dancers.

The acquired results prove that trained Bharatanatyam dancers have better balance than age- and gender-matched non-dancers.

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1. Introduction

Bharatanatyam is a classical Indian dance form that traces its roots to the 2nd century and is still one of the most popular and widely practised dance forms in India.

This dance form is a beautiful amalgamation of emotions ('bhava'), rhythm ('taal') and melody ('raag') as accompaniments to the structural physical aspect of the dance.¹

The repertoire of a classical Bharatanatyam dance piece may be varied, but always presents a dance synchronized with Indian classical music and usually depicts lyrical and rhythmic storytelling. The dancer's hands and facial gestures are used as the language to recite the legends or historical dramas and convey emotions. The footwork, body language, postures, musical notes, tones of the

vocalist, aesthetics and costumes all integrate to express and communicate the underlying text.¹

The dancer deploys specific footwork, the body turns and postures to mark punctuations in the dance and the varied characters.²

Balance is the ability to maintain the centre of gravity of the body while minimizing the postural sway.³ Balance is achieved through the coordination of multiple body systems- motor and sensory (visual, vestibular and somatosensory), cognition, task, environment, and other extrinsic factors. Maintaining balance isn't a matter of staying rigid or in one place, but by making small shifts and adjustments continually.

The basic posture of Bharatanatyam is called 'Araimandi'⁴ which involves the dancer to assume a position of half-squat with hips externally rotated and knees flexed. This helps lower the body and Bharatanatyam makes

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Comparison of Balance in Sub-Acute Stroke Patients with Dominant Lobe versus Non-Dominant Lobe Involvement of Age Group 25 to 60 Years Using Balance Evaluation System Test (BESTest): A Pilot Study

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ABSTRACT

Background: Brain is divided into two hemispheres which work together to carry out various functions. However, there are a few functions which are specifically carried out by a particular hemisphere. This is called as 'hemispheric specialization or lateralization'. Stroke affects a particular hemisphere, thus resulting in loss of the common as well as the specialized functions of that hemisphere. Balance issues are the most commonly seen deficits post-stroke. It is thus important to study whether the side of the stroke has any differentiating effect on the balance deficits. Hence, we compared balance in sub-acute stroke patients with dominant versus non-dominant lobe involvement. Also, Balance Evaluation Systems Test (BESTest) was used in the study, which evaluates balance under various sub-components. This will help in formulating a treatment plan targeting the specific components of balance which were seen to be affected with stroke patients of specific lobe involvement.

Methodology: 24 patients suffering from stroke were selected for the study according to the inclusion criteria. They were further divided into 2 equal groups depending on the side of involvement: dominant lobe stroke group and non-dominant lobe stroke group. BESTest was administered to both the groups. The scores of both the groups were compared.

Result: Statistical analysis was done using Mann Whitney U test. The difference was found to be significant with lower balance scores in patients with non-dominant lobe stroke.

Conclusion: Balance deficits were found to be more common in stroke patients with non-dominant lobe affection than in those with dominant lobe affection.

Keywords: Hemispheric specialization, Stroke, Balance, BESTest (Balance evaluation systems test).

INTRODUCTION

Stroke is one of the leading causes of death and disability in India.¹ Clinically a variety of motor, sensory, cognitive, perceptual, language etc deficits are seen post stroke.² Balance issues are commonly seen in patients with stroke. Many studies have shown that balance issues are associated with risk of falls, mobility, independence and recovery of ADLs.^{3,4}

Hence, balance recovery forms an important goal in stroke rehabilitation.

Balance is the ability of the person to maintain their body's centre of gravity within the base of support.⁵ Balance involves a complex interaction of neural and musculoskeletal systems. Musculo-skeletal components include joint range of motion, muscle properties, spinal flexibility and biomechanical relationships among linked



NARRATIVE LITERATURE;

3) ROLE OF PHYSIOTHERAPISTS IN SCHOOL HEALTH RESEARCH IN INDIA: A NARRATIVE SYNTHESIS OF LITERATURE

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ABSTRACT

Background: Several large-scale population studies have highlighted the decline in physical activity and fitness levels among Indian school children. There has been a determined effort at a National level to facilitate health and wellness among school children by mandating regular participation in physical activity and periodic assessments using standardized metrics. Though physiotherapy as a profession is well placed to support existing pathways towards promoting health and wellness in schools, it is not clear if physiotherapists are engaging in school health programs. This review therefore aimed to summarize studies conducted by Indian physiotherapists in school setting.

Methods: Using a narrative review approach, studies were retrieved using a two-step strategy: a. Literature Search in scientific database and repositories; b. Snowballing strategy. The search was executed in Medline through PubMed, ProQuest, Shodhganga, and Google Scholar. In addition, grey literature was retrieved using snowball sampling strategy to reach out to potential researchers.

Results: A total of 36 published and un-published studies were identified for this literature review. All but one was cross sectional studies and had sample size ranging from 25-2167 participants. Various components of physical fitness, physical activity levels and posture related ergonomics were the focus of studies. Population-based reference norms were also reported for grip strength and six-minute walk distance.

Conclusion: Indian Physiotherapist have consistently shown interest in school health programs. There is a need for concerted professional initiatives to bring together like-minded people and provide the necessary impetus to advocate the role of physiotherapists in school health programs.

Key Words: Grip Strength, Health Promotion, Physical Activity, Physical Fitness, Six-Minute Walk Distance

INTRODUCTION

Studies done in the past reveal that almost half of children and youth in India do not meet recommended guidelines for physical activity and sedentary behavior¹. The 2018 India Report Card on Physical activity for children and youth has reported that only about 25% of our children and youth accumulate ≥ 60 minutes of Moderate to Vigorous Physical Activity (MVPA) daily while only 15% meet recommended standards of Fitness². This report restates the need for renewed government strategies and investments to facilitate active living among children and youth.

In effect, the Central Board of Secondary Education introduced a well-designed program to mainstream health and physical education in schools for classes 9th and 10th from the academic year 2018-19³. This was extended to classes 1st to 8th from academic year 2019-20⁴. Similarly, in August 2019 a nation-wide Fit India Movement was launched by the Prime Minister to encourage people to remain healthy and fit by including physical activities and sports in their daily lives⁵. The Sports Authority of India developed the Khelo India Mobile Application to assess physical fitness of school going children across the country and also gave the Standard Operating Procedures for undertaking Khelo India Fitness

Assessment Training of Trainers Program⁶.

With the philosophy of encouraging physical activity towards healthy living aligning well with the scope of physiotherapy service provisions, there has been an increasing impetus for physiotherapists to be active promoters of physical activity and health promotion. In this context, the policy stimulus towards physical activity and health promotion in schools in the last couple of years augers well for physiotherapists to systematically contribute to school health program in our country. Anecdotal information suggests that many physiotherapy academic institutions and researchers are involved in school health programs. However, no studies have documented the role and contribution of physiotherapists in school health research in India. This literature review was therefore performed to identify and summarize research studies by physiotherapists with an emphasis on assessment and interventions to improve physical activity and fitness in school children.

Methodology:

To identify research studies on assessment and interventions to improve physical activity and fitness in school children by physiotherapists in India, a two-step strategy was adopted: a. Literature Search in scientific database and repositories; b.

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Comparison of Conventional Balance Exercises with Auditory Stimuli vs. Conventional Balance Exercises with Visual Stimuli vs. Conventional Balance Exercises with Auditory and Visual Stimuli Both On Balance in Healthy Geriatrics: An Experimental Prospective Study

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ABSTRACT

Introduction: Balance is an important aspect of an individual while undertaking various daily activities. It is a dynamic process requiring sensory detection of body motions, integration of sensorimotor information within the CNS, and execution of appropriate musculoskeletal responses in order to establish equilibrium between destabilizing and stabilizing forces. Among geriatric population, impairment in the control of balance under dual-task conditions is a common occurrence. Impaired dual-task balance performance predicts adverse outcomes such as falls and decline in both cognitive and physical function.

Objectives: To assess balance using One Leg Stance Test and Forward Reach Test, To assess level of confidence using Activity Specific Balance Confidence scale, To train healthy geriatrics with conventional balance exercises along with auditory stimulus (group A), visual stimulus (group B) and auditory and visual stimuli combined (group C);To compare the effect on balance post training in three groups.

Methodology: 93 healthy geriatrics between the age group of 65-74 years were randomly allocated into three groups (A, B ,C).Balance assessment was done pre and post one month treatment using OLST and FRT. Treatment sessions were carried out thrice a week for 4 weeks. Each balance training session lasted for 45 minutes. Conventional balance exercises were given for all the three groups along with auditory stimulus (group A), visual stimulus (group B) and auditory and visual stimuli combined (group C).

Result: Results show statistically highly significant improvement in OLST, FRT and ABC scores of three groups when compared pre and post training. Changes in OLST duration, FRT distance and percentage of ABC scores from pre to post between groups was statistically not significant.

Conclusion: The study concludes that there is no significant difference between the three groups post intervention i.e. all the three treatment strategies are equally effective.

Key words: Dual Task Training, Balance, Geriatrics, Postural Control.

INTRODUCTION

Postural stability, also referred to as Balance is considered to be an important aspect of an individual while undertaking

various daily activities which is achieved by a complex process involving the function of musculoskeletal and neurological systems.

Correlation between Dynamic Gait Index and Falls Efficacy Scale -International in Community Dwelling Ambulatory Elderly

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ABSTRACT

Background: Balance deficits leading to fall is leading cause of injury in adults of all ages, often associated with significant morbidity and sometimes mortality. Falls of injury - muscular weakness - bedridden condition - overall deconditioning - isolation. Thus screening of the elderly for risk of falls is important for its prevention. If this research proves a correlation between the two outcome measures (DGI and FES-I), the FES-I, which provides a more functional evaluation, can be used alone in the assessment to construct more functional goals and for quick screening.

Method: 70 community ambulating geriatric individuals from 65yrs to 75yrs were included in the study. They answered the 16 FES - 1 questions, and performed the 8 DGI components. Scores of the two were statistically correlated.

Results & conclusion: Statistical analysis was done using spearman's correlation coefficient. There was negative correlation between the two outcome measures, dynamic gait index and falls efficacy scale international, in community dwelling ambulatory elderly.

Keywords: Elderly, Fall-risk, Balance, Screening, Geriatrics

INTRODUCTION

Geriatrics is a medical specialty which focuses on the care and treatment of elderly, usually people who are 65 years of age or older¹. According to center for disease control and prevention, roughly more than one third of the adults aged more than 65 years, fall each year². Falls are leading cause of injury related deaths. Balance deficits and fear of falling are few of the major causes for falls. Such balance deficits leading to falls are a leading cause of injury in adults above 65 years of age, often associated with significant morbidity and sometimes mortality. For instance most of the hip fractures occur due to falls leading to further complications, altogether decreasing the confidence of the elderly and their quality of life. Hip fractures contribute

to 50% of total mortality in geriatrics³. Lack of balance, or balance deficits leading to falls is a risk factor that can be modified or altered, so that the incidence of falls can be reduced. Fear of falling is reported by one in four older people in the community⁴. A worldwide caregiving crisis is predicted owing to changing gender roles, cultures, and erosion of traditional family values and increased trend for nuclear families. The number of geriatrics living on their own has increased; they have to care for themselves & if left alone with such balance deficits & fear of falling they have increased risk of falls and in turn injuries, eventually leading to social isolation which triggers a vicious cycle of: injury - muscle weakness - bedridden condition - social isolation - overall deconditioning. Thus there is a need

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Prevalence of sensory processing dysfunction in children with difficulties in learning

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Abstract.

Introduction: Sensory Processing Dysfunction (SPD) is the impaired ability to receive, process and react to sensory information in an adaptive way. It has been associated with conditions like Learning Disabilities, Autism etc. Affection of the sensory systems may result in difficulties in learning and cause the child to fall behind in class.

Aim: To find the prevalence and types of SPD in children with difficulties in learning.

Materials and Methods: This study was a cross sectional analytical study conducted in the community. The sample size was calculated as 286, based on prevalence from a pilot study, acceptable error 6%, confidence interval 95% and non response 10%. Convenient sampling technique was used. The Short Sensory Profile (SSP) was used as an outcome measure.

Statistical Analysis: SSP was scored as per the manual provided. Descriptive analysis was done using excel.

Results: 53.46% of the sample considered had definite SPD, 25% probable SPD and 21.54% showed typical performance. Maximum affection was found to be in the order of auditory filtering, low energy/ weak section and under-responsive/ seeks sensation sections of SSP.

Conclusion: In this study, prevalence of SPD with difficulties in learning in children was determined as 53.46%.

Keywords: Sensory processing disorder, Difficulties in learning, Sensory integration, School children

Introduction

Sensory integration has been defined as the 'neurological process that organizes sensation from one's own body and environment and makes it possible to use the body effectively within the environment.'¹ It develops the most during an adaptive response that is purposeful, goal directed response to a sensory stimulus from the environment. It results in learning something new. According to Ayres, taking in and processing sensations from the environment forms the core of learning. Impairment in this would result in difficulties in adapting and learning. Such problems lead to slow learning and poor behavior although it may not be apparent to untrained individuals. School going children not only have to learn many new things but they also have to be socially competent within their environment. These complex activities require large amount of sensory integration.

Sensory processing is the way in which central and peripheral nervous system manage incoming sensory input from the seven sensory systems- vestibular, proprioceptive, tactile, auditory, visual, taste and olfactory. Accurate perception of sensation and its modulation are the keystones of sensory integration that in turn result in learning. As SPD is the impaired ability to receive, modulate, interpret and react to sensory information in an adaptive way, a child with processing disabilities may interpret information insufficiently as he may receive inadequate, excessive or inaccurate feedback from the mentioned sensory systems. This could impair the child's performance and refinement of skilled activity.³ The learning pattern of a child with SPD would be disorganized and inefficient. Children with SPD have already been shown to have affected motor control and planning. This could result in poor postural control, clumsy movements or avoidance of or excess motor activity. Processing of each system individually and in combination

with each other will affect learning and thus performance in academics and school.

A study conducted in the USA, 13.7% children enrolled in kindergarten were found to have SPD.⁴ Failure of integration in these children may result in them growing up to fall back in class. Literature shows that without intervention, children with SPD could not cope with demands on them and thus may fail to excel.⁵ At the same time, there has been evidence about the efficacy of physical therapy interventions in improving academic performance in children with SPD.⁶⁻⁹ The government of India has recently announced that instead of just spreading education they want to focus on improving learning.¹⁰ With physical therapy intervention showing positive results, improved sensory processing ability would help these children achieve their abilities and boost their self-esteem and confidence. Therefore the need of this study was to find out the prevalence of SPD amongst these academically low achieving children.

Materials and Methods

The study conducted was a cross-section analytical study in the local schools of Pune, Maharashtra. The study population was school going children with difficulties in learning.

The inclusion criteria were boys and girls, age 6 to 15 years with reported difficulties in learning, and whose academic performance was repeatedly below 50% or grade C. The exclusion criteria was children with mental retardation (I.Q. below 70), on the age appropriate Colored Progressive Matrices and Standard Progressive matrices, as checked by trained psychologists, were excluded from the study. Children with known neuro-motor disorders, children with known orthopedic conditions and children with known



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Research article

Medical research

Influence of instructions regarding task prioritization on performance while doing time up and go - cognitive task in elderly: - A quasi-experimental study

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ABSTRACT

Aim and objective: - The study was design to find the influence of task prioritization instructions on performance while doing Time Up and Go - Cognitive in the elderly and to compare the performance of the elderly for dual-task (TUG-C) in three different situation of task prioritization, i.e. no priority, motor priority and cognitive priority.

Methods: Ethical clearance was taken from the ethical committee. TUG-C test was chosen for dual task. Participants were asked to perform single task (motor and cognitive) first and then dual task with priority instruction based on chit method. Time taken to complete the test and the accuracy of the secondary task was calculated in percentage. Statistical analysis was done.

Conclusion: Elderlies were able to prioritize on the motor task and enhance performance in motor priority condition with priority instruction but no difference was seen in cognitive performance with priority instructions.

Keywords: Dual-task, Prioritization, Instructions.

INTRODUCTION

Aging is a progressive, physiological, and dynamic process that is accompanied by functional, morphological, biochemical, and psychological changes. Being the second-most populous country in the world, India shows a sharp increase in the elderly population⁽¹⁾ Walking is a complex task that requires the integration of multiple sensory information. Our everyday life consists of numerous situations in which walking must be integrated with other activities, such as watching out for vehicular traffic or using a mobile phone. This concurrence of locomotion with another activity is termed as dual-tasking^(2,3) Age-related changes affect motor functions leading to decrease in walking speed and stride length, and increase in lateral sway and stride time^(4,5) "Cognitive capacity", is the background capacity and

play an important role in performing that task effectively⁽⁶⁾ Several studies have shown that, gait in older adults is not simply an automatic process but is influenced by cognitive or motor capacity^(7,8) Relationship between these two depends on the domains of the dual task component. Gait in a dual-task is a multidimensional task⁽⁹⁾ Thus, an individual needs intact cognition and motor ability to do such a task effectively⁽¹⁰⁾ The ability of the individual to perform dual tasks depends on the prioritization of the task and availability of the resource. Two tasks are said to interfere when simultaneous task execution results in decreased performance on one or both tasks⁽¹¹⁾ Task interference can be understood by various theories of dual task. Task interference is also a convenient construct to investigate preferences in task prioritization because when there is task interference person has to prioritize a single task for better performance⁽¹²⁾

Original Research Article

Falls efficacy scale international for elderly in Maharashtra: cross cultural adaptation and validation assessment

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ABSTRACT

Background: Aim of the study was to translate falls efficacy scale international (FES-I) in Marathi and to evaluate the translation on the basis of test-retest reliability, internal consistency, concurrent validity for elderly in Maharashtra.

Methods: The study was divided in 2 phases. Phase 1: Translation of FES-I following translation back translation method following ProFane guidelines. Phase 2: Psychometric testing of the new version. In phase 1 translation in to Marathi and back. The 507 participants were included for the study. Activity specific balance scale was used to as a gold standard for criterion validity and Berg balance scale was used for construct validity.

Results: Study had 53.3% of male and 43.7% of female participant. The validity (Cronbach alpha and ICC) and reliability (Spearman coefficient value) of the scale is excellent.

Conclusions: FES-I (M) has excellent reliability and good validity. Hence this scale can be used to assess fear of falls in Maharashtrian elderly.

Keyword: FES-I (M), ProFane, Marathi

INTRODUCTION

Number of elderlies in India (adults above 60 years) is increasing every day. It is currently 10.1% and was expected to rise by 19% by 2020.¹ Falls is one of the common problems faced by elderly.² According to Krishnasawamy et al and Joshi et al prevalence of falls in Indian elderly is 14%-53%.^{3,4}

Falls not only affect physical functioning but also psychological wellbeing of a person. It may lead to a fear of falling. This is a major health issue among elderly living in community.⁵ Fear of fall is defined as "low perceived self-efficacy at avoiding falls during essential, non-hazardous activities of daily living".⁶ Fear of falls can be assessed using self-efficacy when placed in a fall

related situation. It can be done by evaluating a person's perception of own abilities while doing some specific activities safely without falling.

Many scales are available to assess fear of falls in elderly. The FES-I is a widely accepted tool for this purpose. It is developed and validated by the prevention of falls network Europe (ProFaNE). It is found to have excellent reliability and validity among different cultures and languages e.g., Dutch and German.⁷⁻⁸ This scale has been translated and adapted into French-Canadian, Chinese, German, Turkish, British English, and Brazilian Portuguese languages.

Currently, there is no such measure available in Marathi to assess fear of falls in elderly of Maharashtra. This may



ORIGINAL RESEARCH PAPER

Geriatric Health

ESTIMATING THE CUT-OFF SCORES OF DUAL-TASK COST OF TIMED UP AND GO COGNITIVE TO DIFFERENTIATE FALLERS AND NON-FALLERS: A CROSS-SECTIONAL ANALYSIS.

KEY WORDS: Dual-task cost, Cut-off score, ROC Curve, Sensitivity, Specificity

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ABSTRACT

Purpose and Objective: The purpose of the study was to establish the Cut-off scores of Dual-task Costs (DTC) of Motor Component of timed up and go-cognitive test (TUG-Cog) to help to distinguish fallers and non-fallers in elderly; this cut-off score will help to get a holistic idea about their Dual-Task performance and risk of falls which will, in turn, help for identification, planning and prognostic assessment. **Method:** 101 healthy elderly participants were assessed with help of study tools and divided into 2 groups based on history of fall within the past one year. Single tasks and Dual task TUG-Cog was performed and DTC calculated for all participants. Receiver Operating Characteristics (ROC) Curve was obtained using DTC values against history of fall in the past one year. Sensitivity and Specificity was obtained and cut-off score chosen. **Result:** The area under the curve (AUC) was 0.663 when ROC curve was plotted with DTC values against previous history of fall. The coordinates of the ROC curve gave cut-off score of motor DTC as 8.02% with a sensitivity of 84.6% and specificity of 30.7%. **Conclusion:** The Cut-off score of DTC of Motor Component of TUG-Cog test was 8.02% for differentiating Fallers from Non-fallers.

INTRODUCTION:

Accidental falls occur in nearly one-third of those aged more than 60 years, 10% results in serious injuries. This can lead to disability, hospitalizations, and premature death in elderly. (Ganz, 2007 & Baker, n.d.) About 30-55% of older persons acknowledge of having a "fear of fall" and approximately one third of them report of restricting activities because of it. This avoidance of activities and reduced physical fitness is a risk factor for future falls, mortality, dysfunction & premature nursing home admissions & social isolation. (Mann, 2006 & Kannus, 2007) Everyday life consists of numerous situations in which walking is integrated with other activities, such as watching out for vehicular traffic or using a mobile phone. This concurrence of locomotion with another activity is termed as dual-tasking. (Lajoie, 1996 & Neider, 2011) An individual needs intact cognition and physical (motor) ability to carry out dual tasks effectively. Age-related changes affects motor functions such as strength, balance, coordination, flexibility, reaction times, etc., this can lead to decrease in walking speed and stride length, and increase in lateral sway and stride time. (Elble, 1991 & Mills, 2001) Relative change in performance associated with dual-tasking is referred to as dual-task effect (DTE). (Leibherr, 2018 & Werner, 2018) The level to which one performance is affected by such cognitive-motor interference is typically expressed as the dual-task cost (DTC).

When a secondary cognitive task is superimposed on a gait activity, older individuals, may concentrate on one task more to perform better than other or he may compromise on both tasks. Such effect of both tasks on each other is called as dual task interference (DTI), with older individuals with a fall history showing even greater affection. (Guccione, 3rd ed, 2012 & Plummer, 2015) The understanding of cognitive-motor interference in people with high fall risk or concerns about falling during walking under different cognitive dual-task conditions is still quite limited. (Plummer, 2015) Hence, what value of DTC should be considered normal for an elderly individual with a particular cognitive or motor capacity is unknown. These values are called the cut-off scores, the values of which, if known, can help for risk estimation of falls

assess effect of interventions targeted to improve balance and avoid falls. When walking is combined with a cognitive task it helps to assess dual task function. Timed up and go - cognitive (TUG-Cog) is commonly used dual tasks in most of the studies; hence, it was used as task to assess the dual task skills & focused attention. Thus, considering all the above aspects, current study was planned with the aim of finding out the cut-off scores of DTC for motor component of TUG-Cog dual-tasking in elderly individuals.

Aim & Objectives:

The aim of the current study was to estimate cut-off scores of DTC of TUG-Cog to differentiate fallers and non-fallers in elderly. This study had four objectives - assessing elderly individuals for dual-tasking using TUG-Cog, determining sensitivity and specificity of DTC values using ROC curve, determining cut-off score of motor component of DTC using sensitivity and specificity and determining odd's ratio for cut-off score of motor component of DTC.

MATERIALS AND METHODS:

Institutional ethics committee clearance was obtained. Sample size was calculated according to the available data of Timed up and go (TUG) test for prevalence of balance impairment and Montreal Cognitive Assessment (MoCA) scale for prevalence of cognitive impairment from local population. Prevalence of balance impairment and cognitive impairment was calculated and was found to be 81.72% and 60.55% respectively. The sample size was calculated and found to be 94 using the following formula; (n=sample size, Z_α at =0.05 is 1.96, Z_β at =0.001 is 2.68, p=prevalence of impairment, q=100-p, l=allowable error). Elderly individuals with no depression who are able to read, understand and interpret English having minimum HSC educational qualification, corrected for any visual/auditory impairment and who are community ambulators were selected for the study. Those having a neurological condition such as cerebral vascular disease, vestibular dysfunction, lower extremity fracture in past 6 months, use of pharmaceutical agents like antidepressants, sedatives, cognitive or alertness were excluded. All individuals



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5) Awareness, Perception and Safety Practices about COVID-19 in School Children of 6-16 Years using COVID-19 Quiz

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ABSTRACT

Background and need of study- It's important to know current level of knowledge, perception and practices about COVID-19 of children for their safety when left on their own in community. Knowing this would help the policy makers, parent and teachers to decide the appropriate ways and content that needs to be explained to them in order to ensure the appropriate steps are taken by children to protect themselves when not supervised.

Objective- To find level of knowledge (spread, symptom), perception about the disease and its outcome, and practice of safety precautions about COVID-19 by school going children of age 6 yrs-16 yrs using a questionnaire in Quiz format as per score of the quiz

Method- A survey in the form of Quiz was devised and circulated on school groups and social media. Willing parents were asked to get it filled from their children. Total 786 responses were obtained in months' time (15 May-15 June 2020). Collected data was analysed using descriptive statistics.

Results- Average score of the participants was 42/58 i.e. good awareness. 92.98% and 94.39% participants gave right answer about spread of disease being thru touching infected surfaces and social gatherings respectively. 93.49% and 95.03% children responded as fever and cough /sore throat to be the symptoms respectively. Only 57.58 thought it to be loss of smell too. More than 95% of participants were right about preventive measures to be avoiding gatherings, following 6 ft distance, frequent hand washing, mask and sanitizer use. More than 85% of children knew about following safety precautions if someone is sick in house. 88.20% children said they got most of this information from social media/TV.

Conclusion- Overall there seems to be good level of awareness in children about COVID-19 symptoms; precautions. TV social media seems to be a good source to spread more awareness and information in this group.

Keywords- COVID-19, Children, Safety precautions, Awareness, Spread

INTRODUCTION

COVID 19 pandemic has engulfed the whole world. All nations and authorities are now trying to find a solution for it on a warfront. Social distancing, sanitization of areas, frequent use of sanitizer hand washing practice, avoiding touching mouth nose and eyes seem to be the best line of defense currently.^{1,2} Beating the virus completely in current scenario seems to be difficult due to its ever changing nature and mismatch of availability of

resources/knowledge: emerging number cases.^{2,3,4} Number of affected people is increasing day by day. As per the statistics on 12 th May there are 4700000 cases thru out the world.¹ There are 46008 active cases with 22500 cases being cured and 2300 being deceased in India.⁵ Many people face symptoms of COVID mainly fever, runny nose and coughing which are considered as mild but may prove to be fatal in 3.4 % of case.^{1,6} It can also spread thru asymptomatic individuals who can be carriers.¹ This is an





Impact of work from home in covid-19: a survey on musculoskeletal problems in it professionals

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ABSTRACT

Background and need of study

There has been abundant evidence about IT professionals suffering from different body aches and pains due to improper ergonomics. In current scenario of work from home due to Corona pandemic knowing their musculoskeletal disease status will help the health care professionals to devise a plan for prevention and treatment for this professional group.

Aim

To find common musculoskeletal problems faced by computer professionals while doing work from home in lockdown.

Method

Questions about current and previous musculoskeletal problems, working conditions and ways to tackle these problems were circulated using Google form to computer professionals doing work from home from duration of 15 April 2020 to 15 May 2020. Descriptive analysis was done to gather inferences.

Results

Percentage of shoulder pain/trapezius pain, elbow pain, wrist pain increased by double along with a significant increase in percentage of headache, eye strains and back pain in this period. 71% of the participants leaned in front to look properly at screen or preferred to lie down and work and 40% kept screen too close. 70% of the participants attributed it to faulty posture and increased screen time. 46% participants gave credit to the right posture, taking frequent breaks and exercises for reduction in their pain.

Conclusion

Musculoskeletal problems have increased in computer professionals in lockdown as compared to before. Prevalence of Neck/ shoulder pain, elbow pain, wrist pain and eye strain has increased in lockdown. Inappropriate postures in spite of having good works station, disturbance while working at home and increased working hours seems to be the reason for this increase in problems. This is dealt successfully by them thru frequent breaks and adapting correct postures.

Keywords: Computer professionals, Musculoskeletal problems, Work from home, CoVID-19 pandemic

Original Research Article

Influence of gender on static balance in healthy community dwelling elderly: a comparison using posturography

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ABSTRACT

Background: Background and need of study- Influence of gender on balance is still controversial. Previous researchers have done studies using traditional methods. These methods may fail to detect subtle changes in balance difference. A tool like posturography which is highly specific may help to for accurate assessment and hence precise conclusion. Aim was to compare balance scores of male and female elderly using modified Clinical Test of Sensory Interaction on Balance (CTSIB).

Methods: There were 56 healthy elderly ambulating without an assistive device and free from any neurological and orthopedic problems were assessed for their balance abilities using mCTSIB of balance master (standing on firm surface with eyes open, with eyes closed, standing on foam surface with eyes open and with eyes closed). Sway velocity was assessed using Unpaired t test.

Results: There was a no significant difference in scores of modified CTSIB between male and female elderly (p value>0.005).

Conclusions: Gender has no effect on static balance abilities between male and female elderly while performing modified clinical test of sensory interaction on balance.

Keywords: Balance, Elderly, Gender, Posturography

INTRODUCTION

Balance is basic prerequisite for all types of daily activities and sports.¹ It is an important factor for prevention and treatment of injuries.² The ability to maintain balance while standing requires the sensory detection of the body movements through information received by the vestibular, visual and somatosensory system; the integration of sensory-motor information in the central nervous system; an appropriate motor response; and the planning and execution of movements to control the center of gravity over the base of support.^{3,4}

As age advances, the functioning of these systems deteriorates, and it leads to weakness, fatigue and slowing of movement resulting into increased susceptibility to

falls. Known structural and physiological changes in elderly lead to several problems one of them is fall.^{5,6} Many researchers have proved that, factors like strength, balance, vision, height, vestibular insufficiency, weight, bony deformities and proprioception have been found to influence balance in elderly.^{7,8} Age related changes in all these parameters are gender specific.^{9,10} Whether gender has influence on balance is still controversial.^{12,13} By knowing such gender in which individual is more prone for balance affection can help a health care professional to tap hidden problems and start appropriate interventions in that gender individual before affected balance starts affecting functional independence for that individual.

Many of the previous studies used routine clinical tests like, Timed up and go test, Berg balance test, Functional

Association of Age with Montreal Cognitive Assessment Test Scores: A Cross-Sectional Survey

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ABSTRACT

Old age is characterised by multiple changes in the body. The neurological changes seen in this period are numerous; targeting the executive functions as well. Worsening of these functions can impact quality of life. This study presents secondary analysis of data collected. The mean value of MoCA was found to be 23.97±4.09; the median value was 25. The MoCA scores are correlated with age using Spearman's correlation. This showed that as age progresses, MoCA scores reduced. The MoCA values are comparable to previous studies.

Keywords: MoCA, neurological changes in ageing, MoCA scores.

INTRODUCTION

Old age in India is considered to be from 60 years.^[1] The individual is then termed as a senior citizen. This old age is characterised by multiple changes in the body across all systems.^[2] The various systems where changes are noted first are the cardio-vascular and the musculoskeletal systems,^[2, 3] with many elderly individuals receiving medications for conditions related to these two systems.^[2]

Another major system that undergoes age-related changes is the neurologic system, with various executive functions showing variations. Assessing these functions shows that the results vary from those of a young age group. Executive functions like speech, intelligence, memory, cognition and orientation can change drastically over the years.^[4] Surrounding environment, physical activity levels, social interactions play a major role in the maintenance of these functions.^[4,5]

Any worsening of these functions manifests as loss of quality of life and an inability to lead life with complete independence.^[5] These changes can be part

of the umbrella term dementia or can also be a response to changes in other systems of the body, like loss of orientation which is related to altered electrolytes in the body.^[4]

The changed executive functions can be assessed using various outcome measures like the Mini mental state examination scale,^[6,7] the Montreal Cognitive Assessment scale.^[6-10] Both these scales assess the executive functions of the brain, with items for cognition, memory, basic arithmetic, visuo-spatial perception included in the assessment. Though easy to administer, these scales take up to 10 minutes for the respondent to answer fully. The assessor has to be present throughout the test and in fact has to ask the questions on the test. Though the MMSE has been used extensively in clinical practice, the MoCA is now being shown as a better scale to identify cognitive function and is more sensitive to the presence of impairments.^[6, 7, 11, 12]

Typically, literature suggests that executive functions worsen with age.^[11, 12] Indian values have been presented for English as well as non-English language

Effect of Backpack on Static and Dynamic Balance in Healthy School Children: A Comparison

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Abstract

Purpose: To assess and compare static balance using Single limb stance test (SLST), dynamic balance using Paediatric reach test (PRT) and Star excursion balance test (SEBT) with backpack and without backpack in healthy school children

Method: 150 healthy school children between 10-14 yrs were assessed using SLST, PRT, SEBT with backpack and without backpack. The data was analysed using paired t test.

Result: The scores for all tests were significantly low while carrying backpack ($p < 0.0001$)

Conclusion: Balance abilities in healthy school children get affected while carrying backpack.

Keywords: backpack, balance, static, dynamic, school children

Introduction

Backpacks are commonly used by almost all students, military personnel and hikers.^{1, 2} Increasing homework, more number of textbooks, bigger size of texts, variety of objects to be carried to school has led to a significant increase in load to be carried at school.^{3, 4} Lack of storage space,^{3, 5} and increased travelling time along with this load has drawn attention of several researchers and regulatory authorities on ill effects of the backpack on school children.

Amount of weight carried by children in their backpack generally exceeds the recommended 10% body weight limit.^{6, 7, 8} Backpack, when carried posteriorly, causes shift of COG posteriorly and higher, leading to forward trunk lean and forward head posture.⁹ In children, who already have larger heads and higher COG as compared to adults, this causes further deleterious effect on postural system. An individual uses antigravity muscles while quiet standing, ankle strategy while reaching in front or back within BOS and stepping strategy while going out of BOS.¹⁰ With this added weight and altered biomechanics, these systems get challenged, which may lead to altered balance.

With today's changing scenario the children have to travel alone in public transport or on cycles or walking to reach to the schools. Heavy backpacks, challenged balance control system, along with heavy traffic and changing surroundings may increase the risk of falls in these children.

A lot of emphasis has been given to postural changes^{9, 11} and pain^{12, 13, 14} due to backpacks, but altered balance issues in daily life due to backpack have been comparatively ignored, hence this study was designed with objectives of assessing and comparing the balance scores using SLST (Single leg stance test), PRT (Paediatric reach test), SEBT (Star excursion balance test) with backpack and without backpack in healthy school children.

Methods

Design- This was a quasiexperimental design where participants served as their own control. Chit method was used to decide the order of the measurements for participant carrying backpack or no backpack.

Participants- 150 participants (calculated from a pilot study with SD-5.62, alpha-0.05, beta-0.9) between 10-14 years, of both gender, with ability to attend all data collection sessions and whose informed consent

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Research article

Medical research

Dual task performance and executive function in physically under active and physically active elderly: A comparison

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ABSTRACT

Background

Effect of being physically active on motor and cognitive function is well known. Indirect effect of being physically active on dual tasking needs to be explored.

Aim & Objectives

To compare dual tasking and executive function in physically active and underactive elderly.

Method

124 Elderly were divided in to physically active and non-active using Rapid Assessment of Physical Activity (RAPA) scale and assessed for their Dual tasking skills using TUG-Cog, TUG-motor. Data was analyzed using unpaired t test.

Result

Physically active elderly performed significantly better than underactive elderly on Tug cog ,manual in both groups (p<0.001)

Conclusion

Physically active elderly have better dual tasking skills than their physically underactive counterparts.

Keywords: Dual tasking, Elderly, Physical activity

INTRODUCTION

Many activities of daily life involve simultaneous performance of multiple tasks which concurrently challenge motor and cognitive functions [1]. Aging leads to abnormal alterations that compromise the performance of motor skills, including impaired postural control, abnormal posture/ gait/ balance. This leads to a reduction in functional capacity thus causing difficulties in

adapting to the environment, all of which can lead to a greater risk of falls [2-4].

The ability to perform multiple tasks which are common in daily living such as walking while engaged in a concurrent mental task (e.g. walking while talking, crossing road while carrying objects etc.) is impaired in elderly which is commonly correlated with falls⁽¹⁾. Most of significant decrements in gait and/ or cognitive performance are





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Research article

Medical research

Establishing Normative Data for Fine manual control composite of Bruininks Ose-retsky test of Motor Proficiency-2nd edition, for Children of 4-5 years in Western Maharashtra region

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ABSTRACT

Gain in normal fine motor skills is essential for activities like, eating, zipping, and dressing, undressing, so delay in attaining such activities can hinder day-to-day activities can affect schooling and social participation thus affecting self image. Culture, Environment, socio-economic status, Gender, mother's education and presence of siblings are some of the factors that can influence motor development. Children from different areas or regions may show different pattern of development. Using the same logic, the present study was planned with the aim to Establish Normative Data for Fine manual control composite of Bruininks Ose-retsky test of Motor Proficiency-2nd edition, for Children of 4-5 years in Western Maharashtra region. BOT-2(test re-test reliability - 0.86 to 0.89, and validity - 0.78), is a standardised measure to evaluate Fine and Gross Motor Skills in individuals aged 4-21 year. One of the composite of BOT-2 (Fine manual control) was used as an outcome measure with total 15 items. This cross-sectional study involved 307 healthy participants (146 females, 161 males), screened from various schools and day-care centres of western Maharashtra region. The normative data for the same was obtained using Mean and standard deviation. The normal ranges of standard scores for Fine manual composite of BOT-2 between the age of 4-5 years female, male and combined were 58-70, 60-72, 56-68 respectively. Female and male scores comparison using Unpaired t- test (p value- 0.0205) showed significant difference. The Obtained data can be used for appropriate analysis, motor delay detection, clinical analysis and future researches.

Keywords: Normative Data, Fine Motor skills, Bruininks Ose-retsky test of Motor Proficiency-2nd edition (BOT-2).

INTRODUCTION

The process of evolution from a helpless infancy to an independent adulthood is known as child development [1]. Child development involves various interdependent aspects like sensory, motor,

cognitive, social and emotional domains [2]. Attainment of specific behavioral, physical, socio-emotional and cognitive milestones at specific age of life is termed as a normal development [3]. It is a systemic process which refers to the progressive





Effect of yoga vs yang tai-chi on balance and quality of life in healthy elderly: a comparison

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ABSTRACT

Objective

To determine if Yoga intervention and tai chi intervention could improve balance and QOL in healthy elderly. To identify the most efficient balance training intervention amongst the two.

Design

Pre-post design

Setting

Parks, Community centers

Participants

Total 83 healthy elderly (age range-65 yrs to 74 yrs) were recruited by chit method to either Yoga or Yang Tai-chi intervention group. 30 participants in each group completed the intervention program.

Intervention

A 6-week Yoga or Yang Tai Chi intervention specifically tailored to elderly and designed to improve strength, flexibility and proprioception was performed by healthy elderly. Participants attended five 40-minute exercise classes per week.

Main Outcome Measures

Forward reach test (FRT), Timed Up and Go test (TUG), Berg Balance Scale (BBS), Quality of life Questionnaire (SF-36)

Results

There was a significant difference in scores before and after 6 weeks of intervention ($P < 0.0001$). Yang Tai chi exercise intervention showed a more significant difference in all outcome measures before and at end of intervention program as compared to Yoga intervention ($P = 0.049, 0.0002, 0.0004, < 0.0001$ for FRT, TUG, BBS, SF-36 respectively).

Conclusion

Both exercise interventions improve balance and QOL in healthy elderly. Yang Tai Chi intervention was more effective to improve balance and QOL as compared to Yoga intervention.

Keywords: Yoga, Tai Chi, Balance, Elderly

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Physical Activity Status of School Teachers of Pune City in an Education Society: Analysis Using GPAQ and EBBS

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ABSTRACT

Objectives- To collect information related to level of physical activity in school teachers in Deccan Education Society school teachers in Pune city.

Methodology- 189 teachers with minimum of 1 yr of teaching experience from various schools were asked about their level of physical activity using GPAQ (Global Physical Activity Questionnaire) and EBBS (Perceived Benefits and Barriers to Exercise scale). Data was analysed using descriptive statistics.

Results- 50% participants were Inactive, 48% were Low physically active and 2% were moderately physically active. 35-44 age group is the most active age group (69% Active). They were most active in travel domain. Although active and inactive teachers perceived similar barriers, active teacher perceived more facilitators as compared to inactive teachers. Common barriers were, exercise places are too far away and timings being inconvenient (62%, 56%) and common facilitators were, I enjoy exercise, -I will live longer if I exercise, Exercise improves the way my body looks (90%, 88%, 88%).

Conclusion- According to WHO criteria may school teachers fell into inactive or low active group. Most common were distance, inconvenient timings and facilitators were, exercise being enjoyable, a way enhance longevity and physique.

Key words: Physical activity status, school teacher, GPAQ, EBBS

INTRODUCTION

Prevention of NCDs is a growing issue: the burden of NCDs falls mainly on developing countries, where 82% of premature deaths from these diseases occur. Tackling the risk factors will therefore not only save lives; but also will provide a huge boost for the economic development of countries. ⁽¹⁾ Physical activity is defined as any bodily movement produced by skeletal muscles that require energy expenditure - including activities undertaken while working, playing, carrying out household chores, travelling, and engaging in

recreational pursuits. ⁽²⁾ Regular and adequate Physical Activity has immense mental and physical health benefits. It has been identified as the fourth leading risk factor for global mortality (6% of deaths globally). ⁽³⁾ It burdens society through the hidden and growing cost of medical care and loss of productivity. ⁽⁴⁾ It has been reported to be a major "modifiable" risk factor for NCDs. Considering the importance of Physical activity WHO has started monitoring Physical activity considering it as a public health priority. ⁽⁵⁾



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15) Physical Activity Promotion in the Physical Therapy Setting: Perspectives from Practitioners and Students in Maharashtra

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Abstract

Background and need of study: Physical activity promotion and practice may vary in health care providers.

Method: 600 participants (300 Physiotherapy final year students and interns +300 practicing therapists) filled the Standardized Physical activity promotion and practice questionnaire.

Results: PT students and Practitioners strongly agreed that, they should promote physical activity and act as a role model for their patients to lead a healthy life style (54 and 65,60 and 71 percentages respectively). Percentage of students practicing physical activity and promoting it was higher than therapists (57 and 38, 37-some times, 45-rarely)

Conclusion- Although students and therapists strongly agree for practice and promotion of physical activity they, lack in promotion of it due to various reasons. Students were found to be promoting and practicing physical activity more than the practitioners.

Keywords: Physical activity promotion, practice, physical therapy.


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Introduction

Simple physical activities like walking, stair climbing, swimming done on a regular basis help to improve quality of life and physical wellbeing.^{1,2} Explorative studies done worldwide encourage use of a collaborative approach of exercises, counseling and physical activity promotion to restore fitness and promote an active lifestyle by therapists.³⁻⁴ In a state like Maharashtra where, health care delivery system is taxed, physically active lifestyle can reduce the burden on system significantly. Physiotherapists, who are in touch with patients for long time, should promote its application as much as they can. In Maharashtra state,

patients either go to an independent therapist or take physical therapy from centers/institutes where they are being treated by physical therapy students under guidance of their teachers.

Factors like age, set up, personality, years of experience, type of patients seen may influence attitudes, beliefs, practice of physical activity promotion. Various studies have been done in different countries to study the percentage of physical activity promotion by physical therapy fraternity along with factors that may influence this practice.⁹⁻¹³ No such data is available for physical therapy fraternity of Maharashtra. This study was planned to assess the level of promotion of physical activity by physical therapy fraternity and to understand factors that influence the practice and promotion trend and reasons for them.

Understanding the beliefs, trends of practice and promotion may help the policy makers to take appropriate steps to enhance promotion of physical activity in these groups thus, enhancing quality of life, reducing monetary and care giver burden on society.

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Research article

Medical research

16) Influence of physical and cognitive capacity on task prioritization during the gait-related dual-task performance in elderly: A comparison

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ABSTRACT

Purpose and objective

To find influence of cognitive and physical capacity of elderly on task prioritization during dual-tasking as there is conflicting evidence about whether the elderly prefer posture first or cognition first strategy while doing dual-tasking.

Method

164 elderly were divided into 4 groups as per their physical and cognitive capacity using MoCA (Montreal Cognitive Assessment) and TUG (Time Up and Go) scores (1- balance affected and cognition normal (BACN), 2 -balance normal and cognition affected (BN CA), 3- balance normal and cognition normal (BN CN), 4- balance affected and cognition affected (BA CA). They were evaluated with n-back test and Time up and go cognitive (TUG-COG) for dual-tasking in motor and cognitive domain respectively. The interference pattern was analyzed for each group.

Result

Mutual interference was observed in each group.

Conclusion

Motor and Cognitive capacity of an individual does not affect task prioritization in the elderly.

Keywords: Dual-task, Interference pattern, Elderly, Task Prioritization.

INTRODUCTION

Aging is a progressive, physiological, and dynamic process. India shows a sharp increase in the elderly population [1]. Falls are the major geriatric health problem [2, 3]. Every year 10% falls results in serious injuries [4]. This leads to disability, hospitalization, and premature death in the elderly [5]. Fear of falling (FOF) is another factor that leads to high levels of anxiety, increased

dependency, and poor quality of life [6]. 30-55% of the elderly have FOF and restrict their daily day to day like walking activity leading to premature hospitalization and isolation [7, 8].

In everyday activity, walking is integrated with other tasks such as using phones, etc. This is termed as dual-tasking [9, 10]. Walking in older people is said to be influenced by cognitive and motor capacity [11, 12]. Age-related deficits of gait



17 Barriers and Facilitators to Community Ambulation in Maharashtra, India: Perception of Individuals with Stroke

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2018-2019

ABSTRACT

Purpose: The study aimed to understand the self-perceived environmental barriers/ facilitators to community ambulation among stroke survivors in Maharashtra State, India.

Method: The Facilitators and Barriers Survey /Mobility Questionnaire (FABS/M) was used to collect information from a of 50 individuals with stroke through purposive sampling. Data was analysed using descriptive statistics in Statistical Package for Social Sciences (SPSS) 22.00.

Results: Kerbs, gravel surfaces, rain, noise, and crowd were marked as barriers by 56%, 58%, 52%, 36% and 50% of the participants, respectively. Ramps, elevators, and flat surfaces were reported as facilitators by 42%, 70% and 82% of the participants, respectively. Participants also mentioned the absence of automatic doors and escalators in community areas (92% and 88%), specialised exercise equipment, handrails and specialised bathroom equipment at home (92%, 50% and 52%), and inaccessibility to public places (50%), as barriers to easy mobility.

Conclusions: To enhance community mobility of individuals with stroke, environmental barriers should be reduced and facilitators should be enhanced. The marked absence of facilitators in the environment should be rectified and appropriate steps should be taken to enhance ambulation.

Limitations of the study are the small sample size. Factors like balance, economic status, physical activity of the stroke individuals and severity of stroke were also not considered.

Key words: Facilitators And Barriers Survey /Mobility Questionnaire, stroke, community ambulation.

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ORIGINAL ARTICLE

IJPHY

18 READING AND TEXTING WHILE WALKING: EFFECT ON GAIT INDICES IN HEALTHY YOUNG FEMALES

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ABSTRACT

Background: Mobile phones are becoming one of the necessities now a day. Divided attention leads to affected performance in one or both tasks. Effects of such dual tasking using mobile while walking needs to be explored as the use of mobile phones during walking/stair climbing etc. are very common.

Methods: 132 female students of age 18 yrs to 21 yrs were made for walking under three conditions (walking, walking and reading on mobile, walking and texting). Gait indices (step and stride length, toe out angle) were compared in all conditions using the paired t-test.

Results: Step length, stride length reduced and angle of toe out increased significantly in reading during walking and texting during walking as compared to only walking ($p < 0.0001$). Parameters during texting while walking showed maximum affection.

Conclusion: Reading or texting during walking can affect walking performance adversely. You are texting while walking is most deleterious in the above three conditions.

Keywords: Gait Indices, attention demand, dual tasking, mobile phones.

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10) Perceived Benefits and Barriers to Exercise of Physically Active and Non-active School Teachers in an Education Society from Pune: An Analysis using EBBS

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ABSTRACT

Background: School teachers face a lot of stress and are at a risk of various musculoskeletal conditions and diseases because of sedentary lifestyle and clerical activities in addition to teaching. It is observed that they do not engage in regular physical activity and this may affect their health. The aim of the study was to understand the level of physical fitness and their perceptions to benefits and barriers to exercise. This can help the policy makers to determine strategies to enhance physical activity and thus, overall health of teachers.

Methods: A survey was conducted on 158 school teachers of 8 schools from teaching institute in Pune. The Global Physical Activity assessment Questionnaire (GPAQ) was used to categorize subjects into physically active and non-active. The Exercise Benefits and Barriers scale (EBBS) was used to assess benefits and barriers to exercise. Scores of benefits, Barriers and Motivators subscales were compared from groups of physically active and underactive teachers.

Results: Significant difference was found in scores of perceived benefits and barriers and scores of motivators in both groups ($p < 0.0001$, $p < 0.0001$ and < 0.0001 respectively). Strongest benefit Perceived by the physically active participants was "increases level of fitness, increases muscle strength and decreases tension" (60%, 54% and 54% respectively). Both groups perceived barriers similarly but physically non-active participants perceived barriers such as "exercise tires me" and "no convenient schedules" strongly.

Conclusion: Physically active participants perceive benefits strongly. Barriers perceived by both groups were same. However, physically active teachers adhere to exercise as they perceive benefits strongly.

Key words: Physical activity, Benefits, Barriers, School Teachers

INTRODUCTION

Physical activity is defined as any bodily movement produced by skeletal muscles that requires energy expenditure-including activities undertaken while working, playing, carrying out household chores, travelling and engaging in recreational pursuits.^[1] Benefits of physical activity are widely known whereas low

physical activity has lot of negative side effects on health work efficiency and lead to reduced quality of life. Engaging in regular physical activity can provide numerous physiological, cognitive, and psychological health benefits and also reduce comorbidities like diabetes, hypertension, cardiac conditions, stroke etc.^[2] A strong correlation between physical and cognitive

Effect of flow and volume-oriented incentive spirometer exercise on the hemodynamic parameters in cardiac surgery patients: Pilot interventional study

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ABSTRACT

Background: The 2 types of incentive spirometers (flow and volume-oriented) prescribed after cardiac surgery demonstrate a difference in the pattern of breathing, diaphragm mobility, pulmonary function test. Limited research is available on effect of incentive spirometer on hemodynamic parameters.

Purpose: To provide hemodynamic perspective for preference of a specific type of incentive spirometer after cardiac surgery.

Method: Ideal method of performing breathing on their prescribed incentive spirometer was explained. On 2nd day post surgery, heart rate, respiratory rate, oxygen saturation and blood pressure were noted immediately before and after performing 8 breaths on incentive spirometer.

Results: The intergroup comparison i.e., difference between changes caused by flow and volume-oriented incentive spirometers are statistically insignificant. The intra group comparison, the changes in hemodynamic parameters by flow and volume-oriented incentive spirometers are statistically insignificant, except for heart rate with flow-oriented incentive spirometers showed statistically significant increase. **Conclusions:** There is no difference in the impact of flow oriented and volume-oriented Incentive spirometers on hemodynamic parameters in post cardiac surgery patients.

KEY WORDS: Incentive spirometer, Cardiac surgery, Heart rate, Blood pressure, Respiratory Rate, Oxygen saturation.

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INTRODUCTION

The annual count of cardiac surgeries in India has increased from 10,000 in mid 1990 to about 60,000 by the year 2010 [1]. Owing to sedentary lifestyle, stress, smoking, diabetes, unhealthy diet this count has only increased [2]. Post operative complications, endanger healthy recovery. To prevent this, use of various prophylactic and therapeutic respiratory techniques have been encouraged. One

of the strongly recommended technique by most healthcare professionals is the use of Incentive spirometer [3]. Incentive spirometer is a hand held medical device, used to provide visual biofeedback based on the depth of inspiration, to promote slow, prolonged inhalation, mimicking the natural mode of breathing. This helps in reducing pleural pressure thereby improving lung expansion along with gaseous exchange. This ultimately targets

INFLUENCE OF DIFFERENT SITTING POSITIONS ON THE MAXIMAL RESPIRATORY PRESSURES IN HEALTHY INDIVIDUALS OF VARIOUS AGE GROUPS: AN EXPERIMENTAL STUDY

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ABSTRACT

Background: Variation in the position of the body influences the orientation and length of the muscle. The ability of the respiratory muscles to generate force depends upon its length. There is a dearth of literature about the effect of pressures generated by the respiratory muscles due to the different sitting positions.

Purpose of the study: Due to the importance of body positioning in the optimization of breathing exercises, a need was felt to compare maximal respiratory pressures of the respiratory muscles in different sitting positions and identify a suitable position in which respiratory muscles work the best.

Participants: Total 144 participants were included in the study according to the inclusion and exclusion criteria. Participants were divided into age groups of 18-40years, 41-60years and 60years and above. Equal representation was given to sample number and gender in each group.

Method: MIP and MEP were measured in three different sitting positions i.e. upright sitting position, forward leaning position and semi fowlers position by using the Micro RPM (Micro Medical/Care Fusion, Kent, United Kingdom). The best of the three measurements was taken.

Results: There is a significant difference in the values of MIP and MEP in different sitting positions in all the age groups with p-value < 0.05. In each age group it was found that the values of MIP was better in upright sitting position as compared to forward leaning position (p-value <0.01) with no difference found in the values of MIP between the upright sitting position and semi-fowlers position (p-value > 0.05). The values for MEP was found to be increased in forward leaning position as compared to upright sitting position and semi-fowlers position p-value <0.05.

Conclusion: The present study concluded that, there is a significant influence of different sitting positions on the maximal respiratory pressures in healthy individuals of various age groups.

Implication: The results of this study can be used to make a good clinical decision about which sitting position should be adapted while giving the various types of breathing exercises to the patient.

KEY WORDS: Maximal respiratory pressures, MIP, MEP, body positioning, sitting positions, breathing exercises.

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INTRODUCTION

The strength of the respiratory muscles is an integral part of lung function [1].

It important to know the ability of the respiratory muscles to produce the force required for normal lung functioning thereby




EFFECT OF CHEST BINDER ON KINESIOPHOBIA IN CORONARY ARTERY BYPASS GRAFTING PATIENTS, OVER A PERIOD OF ONE MONTH: A PROSPECTIVE EXPERIMENTAL STUDY

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ABSTRACT

Background: Kinesiophobia has been reported as one of the most common factors that hinder the exercise based cardiac rehabilitation. According to the evidences in the literature and clinical observations, chest binder is prescribed post median sternotomy to reduce the postoperative complaints and complications. Till date no sufficient evidence has been reported regarding effectiveness of chest binder on kinesiophobia in CABG patients post median sternotomy. **Purpose:** To assess the effect of chest binder on the level of kinesiophobia; in CABG patients over a period of one month.


Methods: Participants: Total 70 (50 – males; 20 – females) post CABG via median sternotomy, hemodynamically stable patients, aged between 40 – 70 years, with Tampa Scale for kinesiophobia – short version (TSK – SV) Heart scores > 37 were included. On the 4th post operative day, patients were assessed for level of kinesiophobia using TSK – SV Heart. The patients were divided in to two groups depending on the prescription of chest binder by their surgeons as Group A (with binder), Group B (without binder). One month post CABG, the patients in both the groups were asked to fill the TSK – SV Heart, via telephonic conversation. **Analysis:** Comparison of TSK – SV Heart score at baseline and after one month within Group A and Group B was done using Wilcoxon signed rank test with continuity correction. Comparison of difference of TSK – SV Heart score at baseline and after one month between Group A and Group B was done using Mann – Whitney test. The p value < 0.05 was considered to be statistically significant.

Results: The mean of TSK –SV Heart score on 4th day post CABG in group A and group B was 43.42 (±7.717) and 43.45 (±4.64) respectively. The mean of TSK –SV Heart score on one month post CABG in group A and group B was 35.82 (±8.372) and 39.51 (± 6.03) respectively. A significant reduction in kinesiophobia was observed in group A and group B, p-value 0.00001188 and 0.00007886 respectively. The 95% Confidence Interval (CI) median estimate of group A and group B was 7.9 (5.0 – 10.5) and 4.5 (3.0 – 6.0) respectively. The mean of difference of TSK –SV Heart score in group A and group B was 7.6 (±8.24) and 3.94 (±4.82) respectively. The reduction in kinesiophobia in group A was significantly more than in group B, p-value = 0.00792. The 95% Confidence Interval (CI) median estimate of the mean of difference of TSK – SV Heart score in group A and group B was 3.7 (2.48 - 4.92).

Conclusion: There was significant reduction in kinesiophobia irrespective of the use of chest binder post CABG via median sternotomy over a period of one month. There was marked reduction in kinesiophobia in patients who were using chest binder. **Implications:** Use of chest binder is recommended in patients who have kinesiophobia to encourage their participation in exercise based cardiac rehabilitation.

KEY WORDS: Kinesiophobia, CABG, Chest binder.

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Effect of Ergonomic Advices and Neck Exercises on Neck Pain in Beauticians

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Abstract: Work related musculoskeletal disorders are a common cause of disabilities, absenteeism and increased work restriction in workers who work for a prolonged period of time in awkward postures, repetitive motions or causing forceful exertions. Beauticians are people working in beauty industry where the common task performed by them are, facial cleansing, skin, nail and body hydrotherapy and care, pigmentation and acne care, make-up, face and body hair removal. Performing all these tasks requires them to remain severely flexed in the trunk and non-neutral neck posture causing neck pain. This study was conducted to analyse the effect of ergonomics and neck exercises on the work related neck pain in beauticians.

Keywords: Beauticians, ergonomics, exercises, neck pain.

1. Introduction

Ergonomics developed into a recognised field during the second world war, when for the first time, technology and the human sciences were systematically applied in a co-ordinated manner. Physiologists, anthropologists, medical doctors, work scientists and engineers together addressed the problems arising from the operation of complex military equipment. The results of this interdisciplinary approach appeared so promising that the co-operation was pursued after the war, in industry. Interest in the approach grew rapidly, especially in Europe and the United States, leading to the foundation in England of the first ever National ergonomics society in 1949, which is when the term 'ergonomics' was adopted.³

The word 'ergonomics' is derived from the Greek words 'ergon' (work) and 'nomos' (law). A succinct definition would be that ergonomics aims to design appliances, technical systems and tasks in such a way as to improve human safety, health, comfort and performance. The formal definition of ergonomics, approved by the International Ergonomics Association reads as follows.

Ergonomics (or human factors) is the scientific discipline concerned with understanding of the interactions among humans and other elements of a system and the profession that applies theory, principles, data and method to design, in order to optimise human well-being and overall system performance.⁷

Types of ergonomic interventions:¹

There are two types of ergonomic improvements:

- Engineering improvements

- Administrative improvements
- 1. Engineering improvements - These include rearranging, modifying, redesigning, providing or replacing tools, equipments, workstations, packaging, parts, processes, products or materials.
- 2. Administrative improvements - Alternate heavy tasks with light tasks. Provide variety and jobs to eliminate or reduce repetition (i.e. overuse of the same muscle groups)
- Adjust work schedules, work pace or work practices.
- Provide a recovery time (e.g. short rest breaks)
- Make the workers do workstation exercises or postural exercises after specific time period with specified or prefix frequencies.
- Modify work practices so that workers perform work within their power zone (i.e. above knee, below the shoulders and close to the body)
- Rotate workers through jobs that use different muscles, body parts or postures.

Manual Material Handling (MMH) work contributes to a large percentage of over half of a million cases of musculoskeletal disorders reported annually. Scientific evidence show that effective ergonomic improvements can lower the physical demands of MMH work tasks, thereby lowering the incidence and severity of musculoskeletal injuries they can cause. Their potential for reducing injury related costs alone make ergonomic interventions a useful tool for improving a company's productivity, product quality and overall business competitiveness.¹

Injuries of this type are known as musculoskeletal disorders or MSDs. Work related MSD that developed due to the nature of work affect the quality of life of workers, cause absenteeism, increased work restriction or disabilities than any other group of diseases with a considerable economic toll on the individual and society⁷. Experiencing discomfort and disorders while still present at work results in a loss of productivity by 6-9%.⁴ In 2006, approximately 14.3% of Canadian population was living with a disability, with nearly half due to MSDs.⁵

Such type of work may expose workers to physical risk factors like awkward postures, repetitive motions, forceful exertions, pressure points (it is a localised injury to the skin or



Immidiata and Short Term Effect of Mulligan Rib Mobilization on Lung Function and Quality of Life in Patients with Moderate to Severe Grades of Copd- A Prospective Case

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ABSTRACT

Aim and Background: Chronic Obstructive Pulmonary Disease (COPD) is the second biggest cause of death in India. It primarily affects the respiratory system, but Musculoskeletal system is no exception to this. Hyperinflation and hypertonicity in the respiratory muscles impair the normal chest mobility required for respiratory function and for maintaining the optimum lung function. There is very limited data available about the application of Mulligan rib mobilization and its immediate and short term effect on lung functions and HRQoL in patients with moderate and severe grades of COPD.

Method: 16 (9 Male, 7 Female) stable patients with moderate to severe grade of COPD (50-70 Years, Mean⁻) with a normal or overweight BMI were included in the study. Baseline assessment of lung function by Pulmonary Function Test(PFT), Chest Expansion(CE) by Cloth tape and Health Related Quality of Life by Clinical COPD Questionnaire (CCQ) was done before the intervention. Mulligan rib mobilization was given to the 6th, 7th and 8th rib with the patient performing 3 sets of 10 breaths (inspiration and expiration). Immediate assessment of PFT and CE was taken after one session. Treatment was repeated for 7 consecutive days followed by re assessment. The data was analysed using two-tailed paired t tests to compare the pre and post data within the study population.

Results: The results showed that there was an immediate significant ($P < 0.001$) improvement in the PFT and CE immediately post intervention and after 7 day of treatment.

Conclusion: Mulligan rib mobilization has significant immediate and short term improvement in lung function and Quality of Life in patients with moderate and severe grade of COPD.

Clinical significance: Mulligan rib mobilization can be incorporated in pulmonary rehabilitation program of COPD patient to further augment the effect of it on pulmonary function and quality of life.

Keywords: COPD, Manual therapy, HRQoL, Chest expansion, pulmonary function

INTRODUCTION

Chronic obstructive pulmonary disease (COPD), a lung disease characterized by chronic obstruction of the airflow due to prolonged smoking. It interferes with normal breathing and is not fully reversible. 1,2 Chronic bronchitis and emphysema were conventionally used and are now included under the COPD diagnosis. It is not a simple smoker's cough, but a Life threatening, under-diagnosed lung disease that decreases the quality of life and increases the risk of early mortality.2 This disease leads to an irreversible airflow obstruction, an inflammatory responses to long term exposure to noxious particles and gases, cigarette smoke in particular. This results in excessive secretion of Mucous (chronic bronchitis), tissue destruction (emphysema) and disruption of normal repair and defence mechanisms causing small airway inflammation and fibrosis (bronchiolitis).

Normative Value of Chest Expansion in Healthy Children Between 5 to 12 Years of Age Group

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ABSTRACT

Background: Chest expansion measurement is included as a standard mode of measurement to evaluate patient's baseline status of respiratory function. There are various anatomical and physiological differences between adult and paediatric respiratory system hence, adult values of chest expansion cannot be used as reference values in paediatric population. Also, there is lack of recent data that has evaluated chest expansion values in paediatric age group. So, the present study was undertaken to find out normal chest expansion values in children between 5-12 years of age. It is important to know the reference value for precise interpretation.


Methodology: A cross sectional observational study was carried out in 600 children between age group of 5-12 years and with normal BMI (without H/O any cardiac/respiratory illness, musculoskeletal or neurological diseases, spinal deviations, cough and cold). Chest expansion measurements were assessed in sitting position at three levels that is, 2nd, 4th and 6th intercostal spaces (ICS), using a non-elastic measuring tape. It was taken as thoracic circumference at the end of maximum exhalation and inspiration. An average of three such readings at each level was taken into consideration.

Results: To find value of chest expansion at 2nd, 4th and 6th ICS levels a average values of the three measurements taken at each level at same time was taken into consideration.

Conclusion: The normative values of chest expansion in healthy children between age group of 5-12 years is 2nd Intercostal space- 1 inch/ 2.5 cm, 4th Intercostal space- 1 inch/2.5 cm, 6th Intercostal space- 1.7 inch/ 4.25cm.

KEY WORDS: Chest Expansion, Normative Values, Children, Paediatric.

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INTRODUCTION

When breathing normally, inspiration occurs actively and expiration passively. The pump handle movement, predominant in upper thorax, occurs on inspiration and there is an increase in the anteroposterior diameter of thorax. In the bucket handle movement there is an increase in transverse diameter of lower

thorax [1]. The transverse diameter of thorax is greater than the anteroposterior diameter giving it an ellipsoid shape with the ratio 7:5 [2]. The variations between anatomy, physiology and biomechanics of respiratory system of adult and paediatric population is well known [3].

In the new-born the lung thorax compliance




Prevalence of fatigue in individuals from Pune city after 6 weeks of Mild and Moderate grade COVID-19 infection.

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ABSTRACT-BACKGROUND: Coronavirus disease (COVID-19) caused by SARS-CoV-2 virus was declared as a global pandemic by the WHO in March 2020. India is the second worst hit by the pandemic in which Maharashtra records highest number of infected cases with highest number of patients in Pune city. Most of patients belonged to mild and moderate category of COVID-19. A concern about persistence of fatigue was raised in COVID-19 patients during and after the course of infection.

OBJECTIVE: Fatigue affects the physical as well as psychological well being of the patient. Thus, it is essential to find out the prevalence of fatigue after 6 weeks in these individuals from Pune city by using Fatigue Severity Scale.

METHODS AND MATERIALS: A cross sectional observational study was conducted among 25-60 years old males and females suffering from mild and moderate COVID-19 infection. This cross sectional observational study was carried out during the period from August to October 2020 on individuals, who had tested positive before 6 weeks. A telephonic interview by qualified physiotherapist was done that comprised of Fatigue Severity Scale.

RESULTS: After the statistical analysis, it was found that 31% (n=38) participants complained of presence of fatigue after 6 weeks of infection subjectively. When fatigue was assessed objectively using the Fatigue Severity Scale, it was found that only 7% (n=9) participants had problematic fatigue and rest of the 93% (n=112) did not show presence of fatigue.

CONCLUSION: There is no significant prevalence of fatigue post 6 weeks among individuals suffering from mild and moderate grade of COVID-19 infection in Pune region.

KEYWORDS: Mild grade COVID 19, Moderate grade COVID-19, Fatigue, Pune.

I. INTRODUCTION

In late 2019, infection with a novel betacoronavirus, subsequently named SARS-CoV-2, was reported in people who had been exposed to a market in Wuhan, China, where live animals were sold. Since then, there has been rapid spread of the virus, leading to a global pandemic of COVID-19⁽¹⁾ India has been no exception to this pandemic, and there is a widespread infection prevalent India as well. The state of Maharashtra is leading in number of COVID-19 cases (17,84,361) as on 26th October 2020. The city of Pune has shown rising trend in the number of corona cases, from 677 positive COVID-19 cases in the month of April 2020 to as high as 1,61,844 positive COVID-19 cases in October 2020⁽²⁾

Diagnosis of COVID-19 is made by detection of SARS-CoV-2 RNA by PCR testing of a nasopharyngeal swab or other specimens which includes saliva. Antigen tests are generally less sensitive than PCR tests but are less expensive and can be used at the point of care with rapid results. Evaluation and management of COVID-19 patients depend on the severity of the infection. Patients with mild disease usually recover at home, whereas patients with moderate disease should be monitored closely and sometimes hospitalized⁽³⁾

According to algorithms designed in India, Mild Disease cases present with fever and/or upper respiratory tract illness (Influenza Like Illness). They may also present with dry cough, nasal congestion, sore throat, change in sense of taste or smell, headache, muscle pain, and malaise. It is also characterized by the absence of serious symptoms such as dyspnea.^(1,2,3,4) The majority (81%) of COVID-19 cases are mild in severity⁽⁵⁾

Moderate Disease cases present with clinical or radiographic evidence mild pneumonia (with respiratory rate 15 to 30/minute, SpO₂ > 90% on room air). The patients may also present with respiratory symptoms of cough, shortness of breath, and tachypnea.^(1,2,3,4,7)



Health-related Quality of Life (HRQoL) of Individuals from Pune city after 6 weeks of Mild and Moderate grade COVID-19 infection

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ABSTRACT

Background: Coronavirus disease (COVID-19) caused by SARS-CoV-2 virus was declared as a global pandemic by the WHO in March 2020. India is the second worst hit by the pandemic in which Maharashtra records highest number of infected cases in the country with Pune topping the count. Prevalence of Mild and Moderate grade of COVID-19 infection is high among the population. HRQoL was found to be curtailed in adults who suffered from Upper respiratory tract infection and also in survivors of H1N1 pandemic, SARS and MERS epidemics.

Purpose of study: Alteration in individual's HRQoL can affect his daily activities and community participation. There is a dearth of studies about the impact of COVID-19 infection on the quality of life of patients in Indian Population. Hence, the following study was undertaken and HRQoL was assessed using components of Short Form-12 questionnaire.

Results and main findings: This cross-sectional study was carried out on 121 individuals across Pune city, after a mean of 45 days after suffering from Mild (73%) or Moderate (27%) grade of COVID-19 infection. Out of the study population, 29% had one or more co-morbidities present such as type 2 diabetes mellitus, systemic hypertension, hypothyroidism. Results of the components of the SF-12 questionnaire of these individuals are as follows. 61.15% of the study population have no limitations in physical functioning, 65% have no limitation in role physical activities, 72.7% have no pain interference in their daily activities, 92.6% have positive general health perception, 90% have good amount of energy in their daily life, 89.2% have no significant interference in their social activities, 74% have no limitations in their daily activities due to their emotional health, 72.7% have felt peaceful for significant amount of the time and 64.9% individuals have not felt depressed or sad since the infection.

Conclusion: Health-related Quality of Life is not impaired in 61.15% of the population of Pune city who suffered from mild and moderate grade COVID-19 infection.

Clinical implication: This study can be helpful in planning a multidisciplinary treatment after 6 weeks of the infection for individuals who were mildly or moderately infected by COVID-19.

KEY WORDS: Covid-19, Health related quality of life, SF-12, persistent symptoms.

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Reliability of Sachse's mobility criteria in individuals of age 18-24 years

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ABSTRACT

Background: The ability to obtain an efficient yet reliable measurement of mobility can be useful for evaluation, as well as for documentation. The physiotherapists use different tools to assess each and every joint's mobility. In the clinical setting assessing each joint is time consuming. Sachse's mobility criteria is the mobility assessment tool which assess all major joints of body. It is an easy and quick to perform diagnostic tool. Hence, this study is intended to estimate reliability of Sachse's mobility criteria in individuals of age 18-24 years as reliability is the prerequisite for validity.

Objectives: To estimate the intra-rater and inter-rater reliability of Sachse's mobility criteria in individuals of age 18-24 years.

Methodology: 92 participants were selected according to inclusion and exclusion criteria. Anatomical landmarks were marked by the both the examiners and removed after each assessment. Examiner 1 assessed the participant and after the interval of 30 minutes examiner 2 assessed the same participant. Examiner 1 repeated the assessment after 7 days of 1st assessment to avoid recall bias. Data analysis done and interpretations were made.

Results: Sachse's mobility criteria showed good to excellent intra-rater and inter-rater reliability ICC= 0.904 and 0.853 respectively.

Conclusion: Sachse's mobility criteria showed good to excellent intra-rater and inter-rater reliability in individuals of age 18-24 years.

KEY WORDS: Mobility, hypomobility, hypermobility.

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INTRODUCTION

Mobility is often defined as the ability of structures or segments of the body to move or be moved to allow the presence of range of motion for functional activities (functional ROM) [1]. The ability of an individual to initiate, control, or sustain active movements

of the body to perform simple to complex motor skills (functional mobility) is also defined as mobility [1].

Mobility depends on two factors namely joint integrity and flexibility that is extensibility of soft tissues that cross or surround joints- muscles, tendon, fascia, joint capsules,


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2) Comparison of Joint Position Sense in Competitive Recurve Archers and Non-Archers in the Age Group of 15-19 Years Old: A Cross Sectional Study

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ABSTRACT

Background: Archery is a sport requiring shoulder proprioception.

Objectives: This study aims to compare active joint position sense at shoulder joint of archers and non-archers.

Methods: In this cross-sectional observational study, competitive recurve archers and non-archers playing recreational sports were administered an active shoulder joint repositioning test with eyes closed. Three tries were given to accurately replicate administered joint position.

Results: Archers showed more accuracy in active joint repositioning than non-archers.

Conclusion: Archers have better shoulder joint position sense than non-archers.

Keywords: [archery, shoulder, proprioception]

INTRODUCTION

Archery is an ancient sport involving the use of a bow to aim and shoot arrows. By definition, archery is "a precision sport requiring archers to hit targets at various distances depending on the type of archery."

⁽¹⁾ The stages of shooting an arrow include six phases: Bow holding, drawing, full draw, aiming, release, and follow through. It has now evolved into a competitive sport played at various levels including the highest, the Olympics. Apart from this, it can be done recreationally and is still used as a tool for food gathering in some tribal communities around the world. Proprioception is defined as "rate of movement sense, alternatively known as kinesthesia or joint position sense."

⁽²⁾ This term is mostly used for static joint position sense while dynamic joint position is called kinesthesia by some authors. It is carried from peripheral joints to the CNS by general somatic afferents (GSAs) through the

dorsal column tract. Proprioceptors are present in skin, fascia, muscle spindle, tendon, joint capsule, ligaments and the labyrinth. Out of these areas, muscle spindle and Golgi tendon apparatus are present in muscles and tendons respectively, while all other sites have Pacinian corpuscles and free nerve endings. In small joints like the fingers, much of proprioception is sensed by the tactile receptors in the skin. Determining joint angulation in the middle of the total range of motion is a sense mediated via the muscle spindle, but for larger joints like the shoulder, deep receptors present in the tendons and capsule like Pacinian corpuscles and Ruffini endings are more useful. Proprioception is an important sense for archers since archery is a target-oriented sport. An archer uses their whole body to achieve maximum stability while shooting. The entire kinematic chain of the upper limbs bilaterally is involved in archery, but each





3) Influence Of Different Walking Surfaces (Soft, Cement, Tar, Grass, Mixed) On Symptoms And Functional Disability Assessed Using Crd Western Ontario And McMaster Osteoarthritis Index (Womac) In Knee Osteoarthritis Patients Wearing Sport Shoes Of Age 55-75 Years: An Observational- Cross Sectional Study

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ABSTRACT

Aim: To estimate the influence of different walking surfaces (soft, cement, tar, grass, mixed) on symptoms and functional disability assessed using CRD Western Ontario and McMaster osteoarthritis index (WOMAC) in knee osteoarthritis patients wearing sport shoes of age 55-75 years.

Objectives: This observational- cross sectional study estimated the influence of different walking surface on symptoms and functional disability assessed using CRD Western Ontario and McMaster osteoarthritis index (WOMAC) in knee osteoarthritis patients wearing sport shoes of age 55-75 years.

Method: 158 participants were selected according to the inclusion criteria. Inclusion of hill climbing in the walking exercise, past medical history, addiction histories along with shoe characteristics measurements such as heel height and collar height were taken. General instructions regarding self-administration of CRD WOMAC were given and CRD WOMAC was filled by each participant in their respective language. (English, Marathi, Hindi)

Results: After analysis it was observed that almost 50% of the study population walked on major hard surface, followed by about 25% using major soft surfaces. Only few used tar surface. CRD WOMAC scores were higher for harder surfaces as compared to those when the surface was softer. The difference was statistically significant ($F = 89.674, p < 0.0001$). Average CRD WOMAC score was higher (48.15 ± 1.493) among those who did hill climbing as compared to those who did not (37.27 ± 0.698). Heel height ($r = 0.05, p = 0.488$) and collar height ($r = 0.054, p = 0.054$) were not significantly correlated with CRD WOMAC score.

Conclusion: The present study indicates that major hard walking surfaces have the highest influence on the symptoms and functional disability followed by tar, major soft, soft and least on grass surface. Inclusion of hill climbing influences symptoms and functional disability but heel height and collar height does not have any influence on knee patients.

Keywords: CRD WOMAC, Different surfaces, Knee Osteoarthritis, walking

I. INTRODUCTION

Osteoarthritis is a chronic non inflammatory degenerative disorder having multifactorial etiology, which characterized by the loss of articular cartilage, hypertrophy of bone at the margins, subchondral sclerosis and range of alterations in biochemical and morphological functions of the synovial membrane and joint capsule.^[1] It is characterized by degeneration of the articular cartilage and subchondral bone which often leads to various symptoms like pain, joint stiffness and disability.^[2]

Osteoarthritis is dynamic in nature. There are several risk factors for the development of OA knee, some of them are modifiable but some are non-modifiable. Non modifiable such as age, gender and family H/O of OA and modifiable factors are Weight/ Increased BMI, hypertension, diabetes mellitus, limb length discrepancy, history of lower limb



Knowledge, Attitude and Practice of Recreational Long-Distance Runners towards Using Running Shoes: A Survey

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ABSTRACT

Background: Use of the shoe has evolved greatly over the years. From being a necessity for protecting the feet, to being a functional necessity to meet the demands of various sports, its functions have varied over the years. In the recent years sports shoes have undergone a lot of technical changes to suit the sport. Running shoes have flexible characteristics and can be made to suit the runner. While the correct shoes can play a vital role in a runner's performance, improper running shoes have been known to cause various injuries.

Aim: To find the knowledge, attitude and practice of recreational long-distance runners towards using running shoes.

Method: Information was gathered using a Questionnaire which was administered to 109 long distance recreational runners. Collected data was presented in descriptive form.

Results: 74% of runners had fair to good knowledge about running shoes. 72% of the runners had a positive attitude for purchasing the suitable shoes but only 40% were able to implement it fairly in the practice.

Conclusion: Runners have positive attitude towards buying the shoes but they have scored averagely in domains of Knowledge and Practice. Hence, they should be made aware of their foot type, types of shoes, shoe selection and replacement criteria to help prevent shoe related running injuries and to improve their performance.

Keywords – Runners, Running shoes, Marathons, Running Injuries, Questionnaire

INTRODUCTION

Use of the shoe has evolved greatly over the years. From being a necessity for protecting the feet from the ground, to being a functional necessity to meet the demands of various sports, the functions of a shoe have varied greatly over the years. In the recent years, sport shoes have undergone a lot of technological changes to suit the sport. For example, football shoes have spikes to get a good grip on the field. Basketball shoes have extra cushioning at the ankle and heel to absorb the impact of jump and land. Herringbone and hybrid shoe patterns are used for cross training and

dancing, etc. [1] While the shoes for other sports require certain irreplaceable technologies, shoes for running have flexible characteristics and can be made to suit the runner.

The main factor for a runner to consider while buying his/her shoe is the foot structure. Pronated feet, supinated feet, flat feet and neutral feet have different areas of impact on the ground while running. Hence, the running shoe should have shock absorption, cushioning, and support properties at those appropriate areas of the shoe. Improper running shoes have been known to cause various injuries.

THE EFFECT OF HEEL TYPE ON Q ANGLE

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ABSTRACT

Background: Around 80% of women prefer wearing high heel footwear, out of which 30% use it for professional reasons. Usage of high heel footwear revealed to exhibit pathological differences in entire lower limb mechanics. There is a dearth of literature regarding change in surface area of contact of footwear on lower limb biomechanics, with constant heel height in high heel footwear users.

Study design: Cross sectional observational study.

Objectives: To assess and compare Q angle in women wearing flat heel, wedges and pointed heel footwear.

Methodology: 147 females were screened and only 99 (according to inclusion and exclusion criteria) were enrolled in the study. Three groups were made (33 participants in each group). Q angle measurements were taken in supine and standing positions. Collected data was analysed using one way ANOVA and Post Hoc analysis.


Results: Mean value of the Q angle in flat footwear users is (Rt- 14.27±1.64), (Lt-14.18±0.95) in supine; (Rt-15.15±2.22), (Lt-15.18±1.89) in standing. In wedged heel users is (Rt-16.39±1.58), (Lt-16.06±1.92) in supine and in standing (Rt-16.82±2.07), (Lt-16.58±1.95) respectively. In pointed heel users is (Rt-18.76±1.5), (Lt-18.58±1.25) in supine; and (Rt-18.85±1.28), (Lt-18.76±1.3) in standing. There was statistically significant increase in participant's Q angle ($p < 0.0001$) with change in type (surface area of contact) of footwear.

Conclusion: Variable heel type has an effect on Q angle. The Flat heel users have normal Q angle. Wedge heels and pointed heels are associated with significant increase in Q angle.

Clinical implication: Usage of flat footwear is advisable for good lower limb mechanics. Wedges are not better than pointed heel footwear.

KEY WORDS: Q angle, Flat heel, Wedge heel, footwear.

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INTRODUCTION

Women wear High-heel footwear to make themselves look taller and fashionable. The use of high heeled footwear is, and will always be, a common practice among women. According to survey (Farhat Sadique Basha, R. Gayatri Devi, A. Jothi Priya 2018), it has been revealed that

80% of women wear high heel footwear, out of which 50% wear by preference and 30% women use because of their profession [1].

Some workplace studies showed that women who are working in the hospitality industry like hotel management, makeup artist, corporate sector, air hostess wear high heels regularly for


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1) Assessment of Validity of Smart Watch as a Tool for Assessing Oxygen Saturation (Spo2) in Healthy Asymptomatic Individuals between Age Group of 18-25 Years

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INTRODUCTION

SpO₂ (oxygen saturation) is a measure of the amount of oxygen-carrying hemoglobin in the blood relative to the amount of hemoglobin not carrying oxygen. The body needs there to be a certain level of oxygen in the blood or it will not function as efficiently. In fact, very low levels of SpO₂ can result in very serious symptoms. This condition is known as hypoxemia. There is a visible effect on the skin, known as cyanosis due to the blue tint it shows on the skin. Hypoxemia i.e. low levels of oxygen in the blood, can turn into hypoxia i.e. low levels of oxygen in the tissue. This progression and the difference between the two conditions is important to understand. (1)

It is vital to maintain normal oxygen saturation levels in order to prevent hypoxia and the human body usually does this by itself. The most important way that the body maintains healthy SpO₂ levels is through breathing. The lungs take oxygen that has been inhaled and binds it to hemoglobin that then travels throughout the body with the payload of oxygen. The oxygen needs of the body increases during times of high physiological stress activities like lifting weights or running as well as at higher altitudes. The body is usually able to adapt to these increases, provided that they are not too extreme. (1)

There are many ways that the blood can be tested to ensure it contains normal oxygen levels like ABG Arterial blood gas analysis, SPO₂ by pulse oximeter etc. The most common way is to use a pulse oximeter to measure the SpO₂ levels in the blood. Pulse oximeters are relatively easy to use, and are common in health care facilities and at home. They are very accurate despite their low price point. To use a pulse oximeter, finger is placed in it. A percentage will be displayed on the screen. This percentage should be between 94 percent and 100 percent, which indicates a healthy level of hemoglobin carrying oxygen through the blood. If it is less than 90 percent, then medical help is needed (1)

Validity is the extent to which a concept, conclusion or measurement is equivalent to accuracy. Concurrent validity refers to the degree to which the operationalization correlates with other measures of the same construct that are measured at the same time.

Pulse oximeters have been in use for many years. However, they were mostly used by health care facilities during covid-19. But now pulse oximeters have become relatively common in the home, so people are curious wants to know how it works.

Pulse oximeters function by using light sensors to record the amount of oxygen in blood. Oxygen saturated hemoglobin appears to be a brighter red to the naked eye than non-oxygen saturated hemoglobin, and this phenomenon allows the highly sensitive sensors of the pulse oximeter to detect minute variations in the blood and translate that into a reading. This phenomenon is called as spectrophotometry (1)

Due to the advancement in technology, nowadays even smart watch has many features like heartrate, blood pressure, make & receive calls, smart compass, gesture control, accept verbal commands, play music, access notifications, and one of them is measurement of Spo₂. The principle of measurement of Spo₂ in smart watch is same as that of pulse oximeter.(2)

Need of Study

Increased trend towards awareness related to fitness and self-monitoring has led to the increased use of gadgets. However, inappropriate use of wrong monitoring systems can be misleading and sometimes can prove hazardous. There are no

2) Challenges And Concerns of Health Care Professionals Working in Clinics During COVID-19 Phase

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ABSTRACT

Background: Covid-19 is a pandemic, with severe clinical manifestations and high lethality. It has led to numerous problems involving public, administrative and health care sector and thus has become the global issue. In this pandemic situation the healthcare worker strives to provide high quality healthcare to the patients. However due to contagious & close proximity to patients, there is always a risk of infection. Enormous literature is available on impact of COVID 19 on physical and mental health of frontline doctors. But no review is available on impact of Covid-19 on health care professionals who work in private clinics and mostly rely on clinical practice for their income. By knowing their concerns and challenges, specific policies and programs can be made for health, safety and wellbeing of health professionals.

Objective: To identify the challenges and concerns faced by healthcare professionals practicing in private clinics during COVID-19.

Methodology: A questionnaire comprising of domains namely precautionary concerns, financial concerns, psycho-social concerns and other related concerns was designed and validated. It was circulated using Google forms among Healthcare Professionals practicing in private clinics via electronic media. Data was then collected over a period of 3 months; it was then analyzed and represented as descriptive statistics.

Results: Total of 114 Healthcare Professionals (HCP) participated in the study of which 101 met the inclusion and exclusion criteria and their concerns were identified during COVID-19 phase. In precautionary related concerns, for 30% of HCP cost of PPE and for 11% of HCP availability of PPE was the concern while 35% said both were the problems for them. 92.07% and 86.13% HCP reported decrease in patient flow and income respectively. 52.47% reported they had fear and anxiety while 42.57% had depression sometimes during the course of time, 13% always avoided their family members, 23.76% sometimes felt insecure about society's negative attitude. 1% always and 3% often were threatened by the society.

Conclusion: From the study it was concluded that Healthcare Professionals who are working in private clinics faced numerous challenges and were concerned about precautionary, financial, psycho-social issues at varying levels.

Keywords: [COVID-19, Concerns, Healthcare Professionals, Private Clinics]

INTRODUCTION

Novel Corona virus (COVID-19) is an infectious disease having maximal human to

human transmission. ¹ A wave of acute pneumonia emerged in Wuhan City of China in December 2019. It was confirmed





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Research Article

3) EFFECT OF SCAPULAR TAPING IN SHOULDER IMPINGEMENT SYNDROME

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Shoulder impingement, scapular taping, strengthening exercises

ABSTRACT

Introduction:-shoulder impingement syndrome is a clinical syndrome which occurs when there is inflammation of rotator cuff muscles which causes pain and weakness at the shoulder. scapula has important role in impingement syndrome. scapular taping in an attempt to alter scapular muscle activity is commonly used in rehabilitation programme. So purpose of this study is to find out the effect of scapular taping in shoulder impingement syndrome and to compare the effectiveness of taping and exercises versus only exercises in shoulder impingement syndrome.

Methodology:-30 candidates who met the inclusion criteria were selected who were diagnosed to have shoulder impingement syndrome .15 subjects (group A)were treated with only exercises and group B)were treated with taping and exercises assessed with SPADI and VAS .

Results:- p value was more significant in group B as compared to group A. group A and B both showed decrease in pain ,increase in range of motion and improvement in shoulder function. however group B showed more significant improvement than group A.

Conclusion:-scapular taping appear to provide a reduction in pain when assessed by SPADI and VAS. And also there is significant increase in the range of motion of the shoulder joint.

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INTRODUCTION

Shoulder impingement syndrome also called as painful arc syndrome, is a clinical syndrome which occurs when the tendons of the rotator cuff muscles become irritated and inflamed as they pass through the subacromialspace, the passage beneath the acromion this can results in pain, weakness and loss of movement at the shoulder^[1,2]

The scapula has been found to play an important role in impingement syndrome.^[3]the intrinsic muscles of scapula include the muscles of the rotator cuff i.e, subscapularis, teresminor, supraspinatus and infraspinatus.^[4] These muscles are responsible for internal and external rotation of the GH joint along with humeral abduction. The extrinsic ms includes the biceps, triceps and deltoid ms. The third group which is mainly responsible for stabilization and rotation of scapula consist of trapezius, serratusanterior, levator scapulae and rhomboids.

If the scapula fails to properly elevate the acromion impingement may occur during acceleration phase of an overhead activity. The two ms most commonly inhibited during an overhead activity are serratus anterior and the lower trapezius.^[5] These two ms acts as a force couple within the

glenohumeraljt to properly elevate the acromion process and if the ms imbalance exists shoulder impingement may develop.

Signs and Symptoms

The most common symptom in impingement syndrome are pain, weakness and loss of movement at the affected shoulder.^[1] pain is often worsened by shoulder overhead movements may occur at night, especially if the pt is lying on the affected shoulder. The ROM at the shoulder may be limited by pain. A painful arc of movement may be present during elevation of the arm from 60^o-120^o^[6]

Diagnosis

- History
- Physical examination
- Investigation:-MRI, x-ray

Management

The management of shoulder impingement pathology should adress the primary underlying causative factors. This typically includes posture and neuromuscular control via specific exercise^[4,5,7,8-9] and facilitatory taping.^[9-10]

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Immediate Effect of Sciatic Nerve Mobilization Technique on Pain in Patients with Osteoarthritis of Knee

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ABSTRACT

Osteoarthritis is the most common degenerative, progressive, multifactorial disease and is characterized by involvement of the entire joint including subchondral bone, periarticular muscles, menisci, ligaments, capsule, and synovium most commonly involving the knee joint. Pain is the predominant feature of osteoarthritis and both central and peripheral neurophysiological mechanisms are involved in causing pain in osteoarthritis. The pain of osteoarthritis is because of synovitis, subchondral bone lesion, meniscal pathology, and soft tissue lesions which is carried by sciatic nerve along other nerves of the lower limb. One physiotherapy technique that directly works through the peripheral nerve is the neurodynamic mobilization technique. The present study is an experimental study in which, total of 64 patients with osteoarthritis of the knee with rest pain participated. We used VAS and PPT algometer readings to assess pain pre and post 11 mins of sciatic nerve mobilization. The PPT measurement showed a difference of 4.22 ± 0.34 increase immediately post the mobilization and the VAS measurement showed a difference of 1.22 ± 0.15 decrease immediately post the mobilization. This study demonstrated that sciatic nerve mobilization has a positive effect on pain in osteoarthritis on knee.

Keywords: Immediate effect of mobilization, Osteoarthritis of the knee, Pain in osteoarthritis, Sciatic nerve mobilization.

INTRODUCTION

Osteoarthritis is a most common degenerative, progressive, multifactorial disease and is characterized by changes in the structure and function of the whole joint. The traditional concept considered it a disease of articular cartilage but the current concept holds Osteoarthritis as the involvement of the entire joint including subchondral bone, periarticular muscles, menisci, ligaments, capsule, and synovium [1]-[3]. The most common symptoms of osteoarthritis are considered to be pain, stiffness, reduced ROM, swelling, and difficulty doing various functional activities [4].

Pain is the predominant feature of osteoarthritis. The pain sensation is received by nociceptive neurons in the capsule, synovium, menisci, subchondral bone, etc, and is carried by myelinated and unmyelinated fibre and carried to the spinal cord to either stimulate the interneuron to carry the information to higher sensory areas or stimulates the descending central neurons [5].

Both central and peripheral neurophysiological mechanisms are involved in causing pain in osteoarthritis [6]. Osteoarthritis -specific pain is not because of cartilage destruction but due to various reasons. The pain of osteoarthritis is because of synovitis, subchondral bone lesion, meniscal pathology, and soft tissue lesions. Synovitis and thus stretching of the capsule is a very common finding in osteoarthritis joints [7], [8]. According to a study, because of inflammation within the joint, the nociceptive threshold of pain receptors present within and around the joint reduces, and the responsiveness of these nociceptive neurons to stimuli increases, leading to increasing nociceptive sensitivity, finally resulting in peripheral sensitization [9], [10]. This peripheral sensitization causes excessive stimuli to reach the cerebral cortex and thus prominent pain stimuli seen in osteoarthritis patients. Sensory innervation of synovium and capsule increases in osteoarthritis along with peripheral sensitization [7], [8],[11],[12] which further facilitates the increased sensory stimuli to the pain perceiving cortex leading to severe pain in osteoarthritis.

A study in the past shows an increase in Nerve Growth Factor causing nerve fibre sprouting near the joint and there is inhibition of descending pain suppressing pathway because of persistent stimulation of dorsal root ganglia by inflammatory stimuli [9], [10]. This suppression of descending pain suppressing pathway causes reduced presynaptic pain inhibition. Hypersensitivity and affection of the endogenous pain inhibitory pathway suggest central involvement



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Awareness, Perception and Safety Practices about COVID-19 in School Children of 6-16 Years using COVID-19 Quiz

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ABSTRACT

Background and need of study- It's important to know current level of knowledge, perception and practices about COVID-19 of children for their safety when left on their own in community. Knowing this would help the policy makers, parent and teachers to decide the appropriate ways and content that needs to be explained to them in order to ensure the appropriate steps are taken by children to protect themselves when not supervised.

Objective- To find level of knowledge (spread, symptom), perception about the disease and its outcome, and practice of safety precautions about COVID-19 by school going children of age 6 yrs-16 yrs using a questionnaire in Quiz format as per score of the quiz

Method- A survey in the form of Quiz was devised and circulated on school groups and social media. Willing parents were asked to get it filled from their children. Total 786 responses were obtained in months' time (15 May-15 June 2020). Collected data was analysed using descriptive statistics.

Results- Average score of the participants was 42/58 i.e. good awareness. 92.98% and 94.39% participants gave right answer about spread of disease being thru touching infected surfaces and social gatherings respectively. 93.49% and 95.03% children responded as fever and cough /sore throat to be the symptoms respectively. Only 57.58 thought it to be loss of smell too. More than 95% of participants were right about preventive measures to be avoiding gatherings, following 6 ft distance, frequent hand washing, mask and sanitizer use. More than 85% of children knew about following safety precautions if someone is sick in house. 88.20% children said they got most of this information from social media/TV.

Conclusion- Overall there seems to be good level of awareness in children about COVID-19 symptoms; precautions. TV social media seems to be a good source to spread more awareness and information in this group.

Keywords- COVID-19, Children, Safety precautions, Awareness, Spread

INTRODUCTION

COVID 19 pandemic has engulfed the whole world. All nations and authorities are now trying to find a solution for it on a warfront. Social distancing, sanitization of areas, frequent use of sanitizer hand washing practice, avoiding touching mouth nose and eyes seem to be the best line of defense currently. ^{1,2} Beating the virus completely in current scenario seems to be difficult due to its ever changing nature and mismatch of availability of

resources/knowledge: emerging number of cases. ^{2,3,4} Number of affected people is increasing day by day. As per the statistics on 12 th May there are 4700000 cases thru out the world. ¹ There are 46008 active cases with 22500 cases being cured and 2300 being deceased in India. ⁵ Many people face symptoms of COVID mainly fever, runny nose and coughing which are considered as mild but may prove to be fatal in 3.4 % of case. ^{1,6} It can also spread thru asymptomatic individuals who can be carriers. ¹ This is an

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3) Comparison of Physical Fitness Index (PFI) between Spinning (Indoor cycling) female practitioners and Zumba female practitioners using Modified Harvard's Step Test: A pilot study

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Abstract

Background: With increase in awareness about the importance of physical fitness, there has been considerable increase in proportion of population indulging in various new emerging forms of exercises such as Zumba and Spinning.

Purpose of study: To assess and compare Physical Fitness Index (PFI) between females practicing two newer forms of aerobic exercises Zumba (group 1) and Spinning (group 2) and to understand whether one aerobic activity has better PFI values over other and whether they can be used interchangeably. It will also create awareness regarding both the newer forms of aerobic exercise forms Zumba and Spinning and its effect.

Method: Healthy females practicing either Zumba and spinning for one year regularly were chosen. Step board of height 33 cm, metronome, stopwatch used. Modified Harvard Step test was explained and then subjects were asked to do it. Results were calculated and scoring was done.

Results and Main findings: The study showed that in (Group 1) Zumba practitioners 92.86% population had excellent PFI, 7.14% population had fair PFI. In (Group 2) Spinning practitioners, 100% subjects showed excellent PFI, Group 2 had evidently greater mean PFI than group 1 but not statistically significant. There was no statistically significant difference in PFI values between the subjects of two groups spinning and Zumba.

Conclusion: Majority of the population of both the groups showed Excellent PFI. Both the newer types of aerobic exercise forms can be used interchangeably depending on the age of population.

Author Keywords

Zumba, Spinning, Modified Harvard's Step test, Physical Fitness Index, Females

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Original Research Article

Awareness About Risk Factors, Signs and Symptoms of Cardiovascular Diseases and the Perceived Level of Physical Activity along with Sedentary Behaviour in Young Adults of Pune Region: A Questionnaire Based Study

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ABSTRACT

Background: Cardiovascular diseases (CVDs) are the leading cause of death globally. Young adults are more inclined towards unhealthy lifestyle habits, in turn leading to increased risk of developing CVDs. Identifying the level of awareness about CVDs risk factors and signs and symptoms along with their physical activity and sedentary behaviour will help in creating awareness which in turn might help in reduction of the modifiable CVD risk factors.

Objective: To assess awareness and knowledge about risk factors, signs and symptoms of CVDs in young adults of Pune region along with evaluating their perceived level of physical activity and sedentary behaviour.



Method: A questionnaire was designed to address all the components. Face validation of the questionnaire was done. Participants were explained in detail about the study purpose and the procedure; post their informed consent questionnaire was administered on an interview basis. Responses analysed using SPSS software and represented as descriptive statistics.

Result: Total 115 participants were included in the study, with the mean age 21.94±2.26 years. 68 % of the study participants denied gender predisposition and 12% of participants were not sure about it as a risk factor. 69% of the participants had 3-5; whereas 31% had 1-2 modifiable risk factors. Sedentary behaviour was the most prevalent risk factor present in 96.5% of the study participants, followed by physical inactivity in 65.2% of participants. None of the participants met WHO guidelines of healthy diet for adults. 55% of the participants perceived to have fair level of awareness. Only 11.30% of the participants perceived to have good level of physical activity. However, 65% of the participants were physically inactive. Sedentary behaviour was found to be 10.8±2.86 hour on a typical day.

Conclusion: In our study, participants had good knowledge and awareness about the risk factors and signs and symptoms of cardiovascular diseases except for few factors. Majority of participants perceived that they have fair levels of physical activity but more than half of the study participants failed to meet recommended criteria. Majority of our study participants already possessed three to five modifiable risk factors with unhealthy diet, sedentary behaviour and physical inactivity being at top of the list. They are also engaged in high sedentary behaviour.

KEY WORDS: Non communicable diseases, Cardiovascular diseases, Physical activity, Risk factors, Signs and symptoms, Sedentary behaviour, Awareness, Knowledge, Perceived levels.

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Original Research Article

Assessment of Physical activity Level and Sedentary Behaviour Among Pune City Police Personnel Using Global Physical Activity Questionnaire: A Survey

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ABSTRACT

Background: Policemen being an integral part of the law implementation system have long working hours with huge workloads. They may not be able to save time for regular exercise or eat timely healthy meals which may put them at high risk of developing non-communicable diseases like cardiovascular diseases, diabetes, or lifestyle disorders such as obesity. The purpose of this study was to assess their existing physical activity level and sedentary behaviour using Global Physical Activity Questionnaire version 2.0.

Objective: To assess the level of physical activity in police officers during work, travel and leisure-time and also determine the sedentary behaviour in them.


Method: A cross-sectional study was conducted on 270 policemen, 168 males and 102 females, from 16 different police station of the Pune city using Global Physical Activity Questionnaire. Along with the analysis of demographic factors, data was analysed to evaluate if the study participants met the criteria for physical activity recommended by WHO. Participants were then divided into different categories depending on their energy expenditure i.e., MET-min/week. Their sedentary behavior was calculated in terms of hours spent in sitting position.

Result: Out of the total study participants, 50.4% were physically active and 49.6% were physically inactive. 3.7% study participants were involved in the moderate-intensity physical activity at the workplace; 32.2% study participants were active in travel domain and 54.8% in leisure-time domain. 12.2% of study participants were involved in vigorous-intensity physical activity in leisure-time domain only. 134 participants were inactive, 132 were low-active, 4 were moderately-active with not a single participant in highly-active category. The average amount of time spent sitting in the male participants was 6.11 ± 3.03 hours whereas in female participants it was 7.50 ± 2.62 hours.

Conclusion: Even though 50.4% policemen were physically active, most of them were "low-active" and very few were "moderately-active" whereas not a single study participant was found to be "highly-active". Sedentary behaviour in terms of average amount of time spent sitting was found to be more in female than male participants. Also, 51.11% percentage of the study participants belonged to the overweight and obese category. Thus, there is huge scope for improving the physical activity level as well reducing the sedentary behavior in these professionals.

KEY WORDS: GPAQ, physical activity, sedentary behavior, police personnel, Pune city.

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Original Research Article

Work related musculoskeletal symptoms; exposures and perception towards physiotherapeutic interventions at work setting in teachers and caregivers of special schools in Pune – a questionnaire based study

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ABSTRACT

Background: Teachers and caregivers at special schools are at a risk of developing work related musculoskeletal disorders (WRMSDs) as they tend to work in awkward postures. It is important to identify musculoskeletal complaints and exposure levels to incorporate work site modifications to reduce risk of developing WRMSDs. Also understanding their perception towards physiotherapy might help in better implementation of worksite wellness programs.

Methods: Participants were administered nordic musculoskeletal questionnaire (NMQ), quick exposure check (QEC) questionnaire and a self-designed questionnaire with five domains.

Results: Out of the 66 participants, 36 were teachers and 30 were caregivers. Results of NMQ stated that, 20 participants reported to have pain. 50 participants had discomfort in the form of stiffness, fatigue. Assessment via QEC revealed 39 participants were exposed at a lower level, followed by 22 and 5 who were exposed at moderate and higher level. The risk factors causing WRMSDs respectively. 26 participants were not engaged in regular physical activity. All participants had never been explained about safe and ideal ways to handle children with special needs in order to prevent WRMSDs.

Conclusions: Musculoskeletal pain was predominantly in the lower back, shoulder/arms, and neck region. Almost 100% of participants were exposed at a lower level to the risk factors leading to WRMSDs. All of the participants stated that they would like to attend a training program by a physiotherapist regarding the same.

Keywords: WRMSDs, Exposure level, Perception towards physiotherapy

INTRODUCTION

Work related musculoskeletal disorders (WRMSDs), as defined by Forde et al in 2002, "are a subset of musculoskeletal disorders (MSDs) that arise out of occupational exposures and may lead to work restrictions, work-time loss, or consequently cause work leave."¹ WRMSDs are disorders arising at occupational settings or workstations and can contribute towards significant proportion of occupational morbidity. These disorders after setting in, can affect their capacity to work

professionally as well as can hamper their activities of daily living to varied extent. The commonly affected body regions in WRMSDs have been found to be the low back, shoulder, neck, hand, and forearm. Persons with WRMSDs show a vast variety of symptoms such as pain, stiffness, paresthesia, tingling, numbness, and weakness.² All these symptoms affect physical as well as mental health, ultimately affecting the worker's productivity. WRMSDs occur as a result of an activity of a high level traumatic impact or in the form of cumulative trauma disorder; though the latter is common. These disorders could arise in many job professions like Information technology



4) Exercise Based Cardiac Rehabilitation in a Resuscitated; Post Mitral Valve Replacement Middle Aged Woman - A Case Report

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ABSTRACT

Introduction- Rheumatic heart disease (RHD) affects more than 30 million people globally and accounts for about 30,000 fatalities. RHD can worsen with time, leading to significant mitral stenosis and/or mitral regurgitation, which affect more than 30% of patients.

Case Presentation- A 39 years old female, known case of Rheumatic valvular heart disease since 2005; came with a complaint of palpitation and dyspnea on exertion. Investigations revealed severe mitral stenosis with severe tricuspid regurgitation for which she underwent Mitral valve replacement and Tricuspid valve repair and was referred for physiotherapy. On POD-5, she developed VF with asystole and was revived post resuscitation. Once she was hemodynamically stable, physiotherapy sessions were re-started thrice a day, post which recovery was seen in majority of the outcome measures.

Management and Outcomes- Patient underwent regular exercise based Phase I cardiac rehabilitation program. Outcome measures assessed were NYHA, chest expansion values, single breath count, 30 seconds sit to stand test, distance ambulated and RPE.

Discussion- Cardiac rehabilitation post cardiac surgery has proven to be beneficial in terms of length of hospital stay, functional capacity as well as prevention of postoperative pulmonary as well as vascular complications.

Conclusion- Exercise based cardiac rehabilitation helped our patient to overcome respiratory complications in the immediate post operative period. It helped in improving the lung expansion, cardiovascular endurance as well as the functional capacity. It also helped in reducing the fatigue and rate of perceived exertion levels.

Key words- cardiac rehab, valvular heart disease, functional capacity

INTRODUCTION

Rheumatic heart disease (RHD) affects more than 30 million people globally and accounts for about 300,000 fatalities and 10 million impairments annually. RHD is a major worldwide health burden, particularly in low-income and emerging nations, where high morbidity and mortality are common.⁽¹⁾ RHD can worsen with time, leading to

significant mitral stenosis and/or mitral regurgitation, which simultaneously affects aortic valves in more than 30% of patients.⁽²⁾ According to the World Health Organization, in rheumatic heart disease, the heart valves are harmed by one or more episodes of rheumatic fever, an autoimmune inflammatory infection of the throat caused by Group A streptococci.⁽³⁾ The mitral valve

Original Research Article

Perceived Barriers, Enablers, Beliefs and Level of Physical Activity and Awareness regarding Role of Physiotherapy in Patients posted for Bariatric Surgery: A Questionnaire Based Study

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ABSTRACT

Background: Obesity is of huge concern worldwide. Bariatric surgery is effective in managing morbid obesity and its associated complications. Physiotherapy plays a crucial role in the pre-operative as well as postoperative phases of bariatric surgery. Lack of physical activity in patients who are obese, patients who are posted for bariatric surgery and those who have undergone bariatric surgery can be accounted to a lot of factors. Identifying their perceived level of physical activity along with the facilitators, barriers and beliefs will help in addressing these issues and thereby increasing adherence to physical activity.

Objective: To evaluate perceived level, along with barriers, enablers and beliefs of physical activity in patients posted for bariatric surgery. We also evaluated their awareness about the role of physiotherapy in pre and post-operative phases of bariatric surgery.


Method: A questionnaire was designed to gain an insight about factors contributing as barriers and enablers, under the domains of physical, psychological, interpersonal and environmental. It also included perceived level and the existing level of physical activity in the study participants. Questions were also designed to understand their awareness about the role of physiotherapy in the pre and post bariatric surgery phase. It was administered to patients posted for bariatric surgery on an interview basis. Sample size was calculated to be 96. The data was then analysed and represented as descriptive statistics.

Results: All study participants failed to meet the recommended level of physical activity. The predominant barriers perceived by the study participants belonged to physical, psychological and interpersonal domains; whereas environmental barriers were found to be of least significance. 72.92% of the study participants lacked the knowledge about the role of physiotherapy in the pre-operative phase of bariatric surgery.

Conclusions: Interpersonal, physical and psychological being the predominant barriers faced by the study participants highlight the scope of physiotherapeutic intervention. Also these factors can be modified at an individual level, thereby improving the adherence. There is lack of awareness about the role of physiotherapy in the pre-operative phase of bariatric surgery. Thus there is need to increase awareness about the role of physiotherapy in managing obesity and related complications in pre and post op phases of bariatric surgery.

KEY WORDS: Facilitators, Barriers, Beliefs, Awareness, Bariatric Surgery, Physical Activity, Questionnaire based, Physiotherapy, Obesity.

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6 Awareness about Hazards of Physical Inactivity, Advantages and Participation in Physical Activity and Its Components in Junior College Students - A Questionnaire Based Study

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ABSTRACT

Background: Physical inactivity has become a major cause of concern. Along with the numerous ill effects on an individual's health, it poses great economic burden. Recommended levels of physical activity can help to avert the hazards and have protective effects on our body. Lifestyle changes made at an early age will help in adherence and reduction in chances of co morbidities related to sedentary behaviour.

Objective: To evaluate the awareness about hazards of physical inactivity or sedentary behaviour, advantages of physical activity and level of participation in various forms of physical activities.

Methodology: A questionnaire comprising domains of hazards of sedentary behaviour, advantages of physical activity and participation in various forms of physical activity was designed. Post face validation, it was circulated via electronic media among junior college students. Data was collected over a period of four weeks; it was then analyzed and represented as descriptive statistics.

Results: Total of 752 junior college students participated in the study. The study participants were well aware about the hazards of physical inactivity and benefits of physical activity. However many of them did not meet the recommended physical activity levels. Only 26.3% and 41% of the study participants were involved in strength training and flexibility training. Not many of them were involved in warm up and cool down phases.

Conclusion: Though the awareness about advantages of physical activity and hazards of physical inactivity was good, not many of the study participants met the recommended levels of physical activity. Inclusion of strength and flexibility training in workout sessions was low. Thus there is scope of creating awareness about these important aspects of physical activity.

Keywords: Awareness, hazards of sedentary behaviour, Physical activity levels, Junior college students, Questionnaire

INTRODUCTION

Physical inactivity has become a cause of concern for almost every country. Physical inactivity has been attributed to be the fourth leading cause of death worldwide.

^[1] Physical inactivity is associated with paradigm of complications. In addition to the numerous complications or adverse

effects it has on one's health, it also puts an additional economic burden on our society by costing billions of dollars to countries across the world. ^[2]

Physical inactivity can lead to a wide range of complications not only in elderly but also in children and adolescents. As given by Centers for Disease Control and

Original Research Article

Assessment of physical activity and sedentary behaviour in bachelors of computer science students using global physical activity questionnaire version 2: a cross-sectional study

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ABSTRACT

Background: Physical activity has been determined as primary prevention strategy against 35 chronic conditions. Lack of physical activity, improper diet and increase in the use of computer has various health hazards. Considering that the bachelor of computer science students will mostly have sedentary work profile, once they enter the professional world, the objective of the present study was to assess their physical activity level using global physical activity questionnaire (GPAQ) version 2.

Methods: A cross sectional study was conducted on 355 participants, 244 males and 111 females, from an institution catering bachelors of computer science course using GPAQ questionnaire. The data was analyzed to see if they meet the criteria set by World Health organization (WHO) and were classified into categories on basis of MET minute/week. The average time spent in sitting position was also calculated.

Results: At work, 19.15% study participants were moderately active; in travel domain 64.5% were active, in leisure domain 43.94% were vigorously while 41.4% were moderately active. 73.23% of study participants met the WHO set criteria. 26.76% participants were inactive, 62.53% low active, 10.14% moderate active while only 0.81% was highly active. Average time spent in sitting was around 9 hours.

Conclusions: Even though 73.23% of study participants met the criteria, most of the participants had low level of physical activity, thus there is huge scope for improvement in it. They also need to be educated regarding the risks of sedentary behaviour which will further help to reduce the hazards related to physical inactivity.

Keywords: Bachelors of computer science students, Physical activity level, Sedentary behaviour, GPAQ

INTRODUCTION

Non-communicable diseases (NCDs), also known as chronic diseases are the result of a combination of genetic, physiological, environmental and behavioral factors. Non-communicable diseases (NCDs) includes cardiovascular diseases; chronic respiratory diseases, cancer, and diabetes mellitus.¹ They are the leading cause of death globally. NCDs account for 41 million 71%

deaths globally out of which cardiovascular diseases (CVD) account for most of the deaths i.e. 17.9 million annually.¹ 80% of total deaths due to cardiovascular diseases occur in low and middle-income countries.² The risk factors associated with NCD can be categorized into modifiable and non-modifiable. Non-modifiable factors include age, gender, race, and genetics. These cannot be reduced or controlled by interventions.



8) Awareness, Knowledge and Attitude about Basic Life Support among Interns of Maharashtra University of Health Science's Affiliated Physiotherapy Colleges in Pune City: A Questionnaire Based Study

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ABSTRACT

Background: Survival after sudden cardiac arrest is usually low and depends on early intervention, quality of cardiopulmonary resuscitation (CPR) and time to defibrillation. Prompt actions can improve chances of survival post cardiac arrest. Individuals in community, at least the health care professionals should know how to perform Basic Life Support (BLS) as they often encounter such situations. Physiotherapists being associated with patient care in varied settings, if trained will be able to identify the early signs of cardiac arrest and also provide immediate resuscitation.

Objective: To evaluate the awareness, knowledge and attitude about BLS in interns of all Physiotherapy colleges, affiliated to Maharashtra University of Health Sciences, in Pune city.

Methodology: A questionnaire comprising all three domains was designed. It was administered to all the interns of selected colleges in Pune city. Questionnaire was answered in presence of the investigator. The data was then analyzed and represented as descriptive statistics.

Results: The total number of interns from all the selected colleges was 157, response rate was 100%. The interns scored well in awareness domain but some of the individual components of knowledge domain were incorrect in more than half of the study participants. The most rated reason for reluctance in performing BLS was lack of professional training.

Conclusion: Half of the study participants had no valid BLS training, there is scope for appropriate strategies to be implemented to train maximum number of students which in turn might help to improve outcome post cardiac arrest.

Keywords: Awareness, BLS, CPR, Choking, Physiotherapists, Questionnaire

INTRODUCTION

Sudden Cardiac Death refers to an unexpected death from some cardiovascular cause in a person with or without any pre-existing heart disease.^[1] It is estimated that every year approximately 7 lakh sudden cardiac deaths occur in India.^[2] The location of out of hospital cardiac arrest (OHCA) is reported to be majorly at home/ residence followed by public settings and nursing homes.^[3]

Survival after sudden cardiac arrest is usually low and depends on early intervention, quality of cardiopulmonary resuscitation (CPR) and time to defibrillation. Prompt and appropriate actions can improve chances of survival of a person post cardiac arrest. Lesser the time interval from the moment of arrest to the provision of chest compression or defibrillation, better the chances of victim's survival.^[4] Every link incorporated in the

9) Awareness of COVID-19, Preventive Strategies for the same and Factors affecting Immunity in Adult Community Dwellers with No Medical Background- A Questionnaire Based Study

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ABSTRACT

Background: COVID-19 was declared as pandemic in March 2020. There has been steep rise in the number of cases since then. It's definitely taking more time to get its spread under control than it was anticipated. As there is no specific treatment or vaccine available to help prevent or cure COVID-19, the best way is slow down the transmission of disease by strictly following social distancing, respiratory etiquette and proper hand hygiene.

Objective: The objective was to evaluate the awareness about COVID-19 pandemic, preventive strategies implemented against the same and also factors contributing to immunity in adult community dwellers without any medical background.

Methodology: A questionnaire comprising all three domains was designed using Google forms. It was then circulated among various contacts. Data was collected over a period of one month. Prior informed consent was taken from the participants. The data was then analyzed and represented as descriptive statistics.

Results: 657 forms were submitted in the stipulated time frame and were used for analysis. Overall, the study participants had good knowledge or awareness about COVID-19; preventive strategies that have been implemented against the same and factors that may have an influence on immunity.

Conclusion: Although the awareness about all three domains of the study was found to be good in the study participants, there are certain important aspects like mask disposal technique, over the counter medication, affection of pets etc, which needs to be further emphasized in order to provide better understanding about measures against COVID-19.

Keywords: Awareness, Covid-19, Preventive strategies, Immunity boosters, Questionnaire

INTRODUCTION

Coronavirus belongs to a large family of viruses that can cause illness in humans and animals. Several coronaviruses have been known to cause respiratory infections which range from common cold to more severe diseases like Middle East Respiratory Syndrome (MERS) and Severe Acute Respiratory Syndrome (SARS). COVID 19 is an infectious disease which is caused by recently discovered coronavirus, which was unknown before the outbreak

began in Wuhan, China in December 2019. This novel coronavirus was named as the severe acute respiratory syndrome coronavirus-2 (SARS-CoV-2, 2019-nCoV) due to its high homology (~80%) to SARS-CoV, which caused acute respiratory distress syndrome (ARDS) and high mortality during 2002–2003 year. Due to its rapid and massive spread, it was declared to be a public health emergency of international concern on 30th January 2020



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Association of respiratory muscle strength with glycosylated hemoglobin (HbA1c) levels, duration of disease, and physical activity levels in patients with type 2 diabetes: A cross-sectional study

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Abstract:

CONTEXT: Type 2 diabetes is a systemic disorder that propagates several pathological processes leading to a plethora of complications including those on skeletal muscle strength and lung function.

AIMS: This study aims to evaluate the association of glycemic control, duration of disease, and physical activity level on respiratory muscle strength (RMS).

SETTINGS AND DESIGN: A cross-sectional study was conducted in the outpatient department setting after approval from the institutional ethics committee.

SUBJECTS AND METHODS: The Hemoglobin A1c (HbA1c) level of recruited participants was recorded from a recent laboratory test and they were interviewed with the Rapid Assessment of Physical Activity (RAPA) tool to obtain their current physical activity levels. The evaluation of maximal inspiratory pressure (MIP) and maximal expiratory pressure (MEP) was performed using the MicroRespiratory Pressure Meter (MicroRPM) device.

STATISTICAL ANALYSIS USED: Pearson's correlation coefficient (r) was calculated for the RMS variables (MIP and MEP) against HbA1c, duration of disease, and RAPA Score.

RESULTS: Twenty-six participants were evaluated. Significant correlations were found HbA1c with MIP ($r = -0.45$, $P = 0.02$) and RAPA Score with MIP ($r = 0.42$, $P = 0.03$) at $P < 0.05$.

CONCLUSIONS: Inspiratory muscle strength is well associated with glycemic control and physical activity of the individual.

Keywords:

Chronic hyperglycemia, duration of diabetes, glycosylated hemoglobin, maximal respiratory pressures, physical activity, respiratory muscle strength, type 2 diabetes.

Introduction

Diabetes mellitus is defined as a group of metabolic diseases characterized by hyperglycemia resulting from defects in insulin secretion, insulin action, or both.^[1]

Chronic hyperglycemia is intricately related to most complications of type 2 diabetes. In the past decade, glycosylated hemoglobin A1c (HbA1c) has taken over regular blood sugar level monitoring as a measure of glycemic control.^[2]

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Research Study

Medical research

Intra-rater reliability of 6minute pegboard and ring test as a tool to assess upper limb endurance in healthy population between age group 40-70 years

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ABSTRACT

Background - An examination of muscle endurance is important in determining functional capacity. All daily living tasks - supported or unsupported require some degree of muscle and cardiopulmonary endurance. 6 minute pegboard and ring test (6PBRT) have been developed to evaluate arm exercise capacity in individuals with chronic obstructive pulmonary disease. Various studies have used the 6PBRT as a way to evaluate upper limb endurance in various conditions like COPD, asthma, etc.

Purpose of the study - To establish the intra-rater reliability of 6 minute pegboard and ring test as a tool for assessing upper limb endurance in healthy population between age group 40-70 years.

Method - A 6 minute pegboard and ring test tool was made according to guidelines of American Thoracic Society. A cross sectional study was done which included 138 healthy adults (males and females) with mean age of 55.34 ± 8.02 years old. Subjects performed 6 minute pegboard and ring tests twice on same day, with 30 minutes rest in between. Number of rings moved during first test (T1) and after 2nd test (T2) were recorded and compared to find out intra-rater reliability of the tool which was made.

Result - In each age group males and females taken were also equal i.e. 40-49yrs - 23 males and 23 females, 50-59yrs - 23 males 23 females and 60-70 yrs 23 males 23 females. There was no sample loss in the study. Cronbach's alpha or coefficient alpha which is most common test score reliability coefficient came out to be 0.99. Average number of rings moved before were 296.95 and after 30 minutes were 302.24.

Conclusion - Study concludes that 6 minute pegboard and ring test, tool which was made for assessing upper limb endurance has excellent reliability.

Clinical implications - The tool can be used in clinical setup for assessing the upper limb endurance, for prognosis and to train upper limb endurance in healthy individuals as well as many other conditions.


Keywords: endurance, upper limb, tool, reliability, chronic obstructive pulmonary disease

3) Normative Values of Maximal Inspiratory and Expiratory Pressures in Healthy Children of the Age 8-16 Years in a City of Western Maharashtra

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ABSTRACT

Objective: To find normative values of Maximal respiratory pressures in children of the age 8-16 years in Pune City.

Materials and methodology: 572 subjects were selected through cluster sampling. Healthy, school going children were selected. Demographic and anthropometric data like weight, height, age, body mass index was recorded. Maximal inspiratory Pressure (MIP) and Maximal expiratory pressure (MEP) was measured with the help of a portable respiratory pressure meter (Micro RPM).

Results: The study population was divided into different age groups and the mean value was found out.

GIRLS:

MIP: 60.54 (\pm 14.38) cmH₂O to 77.90 (\pm 18.83) cmH₂O

MEP: 54.9 (\pm 10.11) cmH₂O to 70.18 (\pm 11.25) cmH₂O

BOYS:

MIP: 59.76 (\pm 13.46) cmH₂O to 88.2 (\pm 23.11) cmH₂O

MEP: 57.78 (\pm 11.21) cmH₂O to 80.31 (\pm 14.29) cmH₂O

The values showed an increase with age. It was seen that boys had higher values of maximal respiratory pressures than girls.

Conclusion: The age group wise obtained values of MIP and MEP can be used as reference values for assessing respiratory muscle strength in diseased population. Rehabilitation can be planned from these values these values can be used for diagnosis, prognosis and for identifying respiratory muscle weakness.

Key words: Maximal respiratory pressures, children, MIP, MEP, normative values.

INTRODUCTION

It is of great importance to find out the strength of the respiratory muscles in order to adequately carry out pulmonary assessment.^[1] The ability of respiratory muscles to generate the required amount of force should be noted for adequate functioning of the lungs and to identify and recognise weakness of the respiratory muscles in healthy as well as sick population.^[1]

Evaluation, monitoring of respiratory functions have improved in children.^[1] Technological advances, more reliable studies and recognition of the importance of monitoring in clinical practice have all contributed to better understanding of lung function in paediatric age group.^[1] It is difficult to assess respiratory muscle functioning since the muscles have complex attachments (origins and insertions)^[3] The pressure generated



4) Association of Nicotine Dependence with Respiratory Muscle Strength and Six Minute Walk Distance in Adult Smokers

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ABSTRACT

Background: Cigarette smoking is the leading cause of preventable death in the world. It has deleterious effects on various body systems, especially respiratory system, that leads to reduction in respiratory muscle strength and functional capacity. Due to lack of evidence of the effects of nicotine dependence on these two aspects, there was a need felt to conduct a study to find the association of nicotine dependence on respiratory muscle strength and 6 minute walk distance in adult smokers.

Design: It was a cross-sectional observational study.

Participants: 108 healthy adult smokers participated in the study with the age between 20-40 years, who smoked for more than 1 year, with minimum consumption of 1 cigarette per day. Subjects with BMI of more than 30kg/m², who had undergone recent surgeries, who suffered from other respiratory conditions and who were engaged in other strength and endurance workout were excluded from the study.

Methodology: Nicotine dependence was determined by Fagerstrom test of Nicotine dependence, Respiratory muscle strength was measured by MicroRPM and Functional capacity was determined by 6 minute walk distance.

Results: The association of Nicotine dependence with respiratory muscle strength and 6 minute walk distance was determined by Spearman correlation coefficient. There was weak positive correlation between nicotine dependence and maximal inspiratory pressure which was statistically significant. There was weak negative correlation between nicotine dependence and 6 minute walk distance which was statistically significant.

Conclusion: This study showed that there was weak positive correlation between nicotine dependence and Maximal inspiratory pressure and weak negative correlation between nicotine dependence and 6 minute walk distance in adult smokers.

Key Words: Cigarette smoking, maximal inspiratory pressure, maximal expiratory pressure, Fagerstrom test for nicotine dependence, six minute walk distance.

INTRODUCTION

Cigarette smoking is the leading cause of preventable death in the world^{1,2,5}. About 30% of Indians who are older than 15 years of age use different forms of tobacco, out of which cigarettes, cigars, snuff and chewing tobacco are common⁴. Many young adults start smoking at very early age and

the rate of cigarette smoking in this population is increasing steadily^{2,5} making them prone for greater nicotine dependence with the early initiation of smoking⁶. Nicotine dependence is thought to be the central process, which underlies the reason why people continue to smoke and experience greater difficulty in stopping³.



Prevalence of Overactive Bladder Syndrome Among Adult Females Having Stress Urinary Incontinence and Urge Urinary Incontinence Using Overactive Bladder Syndrome Questionnaire

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ABSTRACT

Objectives: To identify the proportion of OABs using OABs-q in adult females classified as SUI or UII based on the results of the questionnaire for female urinary incontinence diagnosis (QUID).

Material and Methods: 243 females of age group 18-55 years were screened for incontinence, of which 102 were included in the study. Questionnaire for Urinary Incontinence Diagnosis and Overactive Bladder questionnaires were administered and the type of incontinence of the women was identified. Proportion of OAB was identified in SUI, UII and MUI.

Results: 102 out of 240 had incontinence, of which 41 women had SUI, 30 had UII and 31 had MUI. Proportion of OAB was 17%, 60% and 87% respectively in SUI, UII and MUI.

Conclusion: Overactive bladder syndrome has a higher proportion amongst women showing mixed urinary incontinence.

Keywords: Stress urinary incontinence, Urge urinary incontinence, Mixed urinary incontinence, Overactive Bladder syndrome, QUID, OAB-q.

INTRODUCTION

The term continence is used when a person is able to control his/her bladder and bowel consciously. The International Continence

50cm in postmenopausal women and for men it is 60-90cm of water.⁽³⁾ The normal continence in females is the compound organization between the bladder, urethra,



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2) Ergonomic Advice Dissemination Method in the Immediate Postnatal Period: A One-Month Follow-Up Comparison of Verbal and Pamphlet-Based Advice on Pain Scores

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ABSTRACT

Background: Pregnancy is a period where the musculoskeletal system undergoes various changes. These changes can cause stresses on the joints, leading to pain in them. Along with this, hormones like relaxin and oestrogen can cause laxity of ligaments and capsules, which can be another cause of strain on the joints. The pain patterns developed due to this can be carried to the post delivery period also. Ergonomics are explained in this period in order for the woman to function with less pain. The methods of reinforcing ergonomics are explored in this study.

Methods: 60 women were conveniently selected for this study. They were randomly assigned to verbal mode and pamphlet mode of ergonomic information dissemination at the start of the study. Pain was assessed at four points during the study: before, immediately after, a day after and a month after giving ergonomic advice.

Results: The Mann-Whitney U Test and repeated measures ANOVA were used to assess the pain levels. The between group pain and comfort levels showed no significant changes over the course of the study. The repeated measures ANOVA, which assessed within group responses, showed a significant change over the course of the study (p-value less than 0.0001).

Conclusion: Ergonomic information can be disseminated by verbal or pamphlet mode, the method can be decided as per the therapist's and the woman's need.

Key Words: ergonomic advice; ergonomic information; pamphlet; postnatal period.

INTRODUCTION

Pregnancy is a period where the body undergoes a variety of musculoskeletal, neurological, cardiovascular and hormonal changes^{1,2,3}. This period is mainly characterized by an increase in laxity of collagenous tissues^{1,2,3}. The main reason for this increased laxity is to ease the process of actual birth of the foetus through the vaginal canal^{4,5}.

The process of labour also marks an extra influx of the hormone relaxin, especially after the baby has crowned, in order to relax and increase the pelvic outlet,

thereby increasing the cervical diameter and hence the vaginal diameter.

Laxity of ligaments is commonly seen in the pelvic joints^{5,6}, mainly the sacro-iliac joint (SIJ). The SIJ, being a joint of minimal translatory movements⁷, can cause pain when the alignment of the joint is compromised during activities of daily living⁸. Along with this reason, many other causes of back pain can be seen during pregnancy.

One of the mechanisms of back pain is the abdominal distention throughout the duration of pregnancy. The physiology of the abdomen causes the uterus to increase

3) Association of Age with Montreal Cognitive Assessment Test Scores: A Cross-Sectional Survey

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ABSTRACT

Old age is characterised by multiple changes in the body. The neurological changes seen in this period are numerous; targeting the executive functions as well. Worsening of these functions can impact quality of life. This study presents secondary analysis of data collected. The mean value of MoCA was found to be 23.97 ± 4.09 ; the median value was 25. The MoCA scores are correlated with age using Spearman's correlation. This showed that as age progresses, MoCA scores reduced. The MoCA values are comparable to previous studies.

Keywords: MoCA, neurological changes in ageing, MoCA scores.

INTRODUCTION

Old age in India is considered to be from 60 years.^[1] The individual is then termed as a senior citizen. This old age is characterised by multiple changes in the body across all systems.^[2] The various systems where changes are noted first are the cardio-vascular and the musculoskeletal systems,^[2, 3] with many elderly individuals receiving medications for conditions related to these two systems.^[2]

Another major system that undergoes age-related changes is the neurologic system, with various executive functions showing variations. Assessing these functions shows that the results vary from those of a young age group. Executive functions like speech, intelligence, memory, cognition and orientation can change drastically over the years.^[4] Surrounding environment, physical activity levels, social interactions play a major role in the maintenance of these functions.^[4,5]

Any worsening of these functions manifests as loss of quality of life and an inability to lead life with complete independence.^[5] These changes can be part

of the umbrella term dementia or can also be a response to changes in other systems of the body, like loss of orientation which is related to altered electrolytes in the body.^[4]

The changed executive functions can be assessed using various outcome measures like the Mini mental state examination scale,^[6,7] the Montreal Cognitive Assessment scale.^[6-10] Both these scales assess the executive functions of the brain, with items for cognition, memory, basic arithmetic, visuo-spatial perception included in the assessment. Though easy to administer, these scales take up to 10 minutes for the respondent to answer fully. The assessor has to be present throughout the test and in fact has to ask the questions on the test. Though the MMSE has been used extensively in clinical practice, the MoCA is now being shown as a better scale to identify cognitive function and is more sensitive to the presence of impairments.^[6, 7, 11, 12]

Typically, literature suggests that executive functions worsen with age.^[11, 12] Indian values have been presented for English as well as non-English language



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Research article

Medical research

Effect of different techniques of kinesiо-taping in low back pain during the third trimester of pregnancy in primigravidas: Experimental study.

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ABSTRACT

Pregnancy related low back pain is a common condition during pregnancy. It is managed with conventional physiotherapy treatment protocols like exercises, use of modalities, manual therapy and various adjunct therapies. Kinesiotaping is also used widely to treat low back pain. There are different techniques of kinesiotaping that are used widely. The aim of this study was to find out the effect of two different techniques of kinesiotaping in pregnancy related low back pain. The outcome measures used were Numerical Rating Scale (NRS) and Pregnancy Mobility Index (PMI). Forty-five participants were allocated in three groups using random number generator with fifteen in each group-control, Taping Technique 1(TT1) and Taping Technique 2(TT2). Control group was provided with conventional exercises like pelvic tilts, core activation and Kegel's exercises which were to be done twice a day for a period of five days along with the ergonomic advice. TT1 was given with the spine in neutral using four I bands which were applied vertically and horizontally. Two I bands were applied vertically using fifty percent stretch and inhibition technique from lower iliac crest to upper twelfth rib and two I bands were applied horizontally using space correction technique. TT2 was applied with the spine in lumbar flexion. Three I bands were used with two applied vertically along the paraspinal muscles with fifteen to twenty five percent stretch and the third tape was applied horizontally with hundred percent stretch in middle and no stretch at the ends. In both the techniques exercises were provided along with the taping given for a period of five days. The outcome measures used were NRS and PMI. Pain was evaluated on NRS at baseline, immediate after intervention and post five days of intervention. PMI score was taken at baseline at post five days of intervention. The results showed significant difference in NRS and PMI scores in all the three groups post five days of intervention but TT1 showed significantly superior difference as compared to other groups. The study thus concluded that TT1 is effective in reducing the pregnancy related low back and it is a better technique of taping as compared to TT2.

Keywords: Exercises, kinesiotaping, low back pain, pregnancy



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Effect of Kinesiotaping and Pelvic Tilts on Menstrual Symptom Questionnaire and Visual Analogue Scale in Primary Dysmenorrhoea in Females Aged 18-30 Years

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ABSTRACT

Background: Dysmenorrhoea is one of the most common problems faced by females which affect them both physically and mentally. The purpose of this study is to find out the immediate and post one month effect of pelvic tilt in combination with taping on alleviating dysmenorrhoea.

Subject and method: The 42 subjects were nulliparous, unmarried women of age group 18-30. The subjects were randomly divided into 2 groups. Group A received taping only were as group B received taping and pelvic tilt exercise. Taping was given for 5-6 days of menstruation and exercises were done unsupervised throughout the menstrual cycle.

Result: The study revealed that both the groups had pain relief but the group which received taping with pelvic tilts had a higher level of pain relief.

Conclusion: Taping in conjunction with pelvic tilts was beneficial both immediately and in next consecutive menstrual cycle.

Keywords: dysmenorrhoea, taping, pelvic tilts.

INTRODUCTION

Menstruation can be defined as the visible manifestation of cyclic physiological uterine bleeding due to shedding of the endometrium. ^(1, 2) This occurs at most once a month from puberty until menopause, except during pregnancy. Commonly known as the menstrual cycle, it is considered to extend from the beginning of bleeding of one cycle to the beginning of the next one. The amount of blood loss is approximately 20-35ml throughout the menstruation period. ⁽¹⁾

Menstrual cycle occurs due to interplay between multiple hormones, mainly between pituitary gland and the ovaries. On the first day of menstrual cycle the levels of oestrogen and progesterone are

low. This leads to secretion of follicle stimulating hormone (FSH) from the pituitary gland. FSH matures the follicle, which produce more oestrogen. Around day 12-14 increased oestrogen levels trigger rise in luteinizing hormone (LH). If the egg does not fertilize, oestrogen and prostaglandin levels fall and leads to menses on 28th day. ⁽²⁾

Many variations can be found in the menstrual cycle, ranging from duration of the cycle to the presentation of menses. One of the variations is dysmenorrhoea, a term used to describe pain associated with menstruation. Dysmenorrhoea is the occurrence of painful cramps during menstruation. ⁽²⁾ There is a dull or throbbing pain in lower abdomen, radiating to back


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6) Effect of Pelvic Floor Exercises on Urinary Incontinence Related to Menstrual Cycle and Quality of Life

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ABSTRACT

Background-Urinary continence is the ability of the urinary bladder to hold the urine. In situations where this ability is lost, there can be a reflexive or involuntary loss of urine, which is termed as urinary incontinence. Incontinence is a social and hygienic problem and is demonstrable objectively. Though it is not a threat to life, it could possibly affect the person's quality of life, and may restrict social activity.

Method- 30 nulliparous females having symptoms of urinary incontinence were screened using Questionnaire for Urinary Incontinence Diagnosis and Kings Health Questionnaire. Consent was obtained from them. They were given pelvic floor exercises 3 times a week for one month period. Second screening was done after completion of one month.

Conclusion - Pelvic floor exercises have a significant effect in reducing the severity of urinary incontinence related to menstrual cycle in nulliparous females of 18-25 years. They are more effective on stress urinary incontinence component than urge. Pelvic floor exercises have also been effective in improving the quality of life of the females of 18-25 years of age.

Key words - Urinary incontinence, menstrual cycle, pelvic floor exercises, nulliparous, quality of life, type of incontinence

INTRODUCTION

Urinary continence is the ability of the urinary bladder to hold the urine. [1] In situations where this ability is lost, there can be a reflexive or involuntary loss of urine, which is termed as urinary incontinence. Incontinence is a social and hygienic problem and is demonstrable objectively. [2] Though it is not a threat to life, it could possibly affect the person's quality of life, and may restrict social activity. [8-15] The affected individual suffers silently and does not take any rehabilitation for their problem. [6] As compared to men, more women are affected with incontinence and tend not to bring their suffering to any one's notice. [8,16,17] Types of urinary incontinence are- [18]

Stress urinary incontinence-

It is the involuntary loss of urine which occurs due to sneezing, coughing, giggling or any other exertion. This particular incontinence occurs when there is a sudden increase in the intra-abdominal pressure and the pelvic floor muscles are unable to counteract the pressure effectively. Hence it results in trickling of urine from the bladder.

Urge urinary incontinence-

It is the involuntary loss of urine which occurs due to or is followed by urgency and exertion. Even if the bladder is incompletely filled, the affected individual

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Identification and Quantification of Stressors in Physiotherapy Students

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ABSTRACT

Introduction- High levels of stress is seen in healthcare students. The scores for emotional exhaustion and depersonalisation are higher than normative data in the majority of clinical physiotherapy practitioners showing a risk of potential burnout. (Balogun et al., 2000) A sound mental and physical health is a prerequisite for any professional or personal achievement. **Objective-** The objectives of the study were to identify the common stressors in physiotherapy students, the perceived extent to which different stressors contribute to stress in the students and to compare the extent to which different stressors contribute to stress in undergraduate and postgraduate students. **Methodology-** 383 students from different parts of Maharashtra, Manipal and Bhopal were presented with a questionnaire consisting of two parts, the PSS-10 and a self-made questionnaire. **Results-** Out of the 383 students that participated in the study, 12.5% students had high stress levels, 78.6% had moderate stress levels and 8.9% had low stress levels. The various stressors identified were intrapersonal, interpersonal, academic, financial and environmental. Academic stress contributed to most stress in both undergraduate and postgraduate physiotherapy students. **Conclusion-** The mental health of physiotherapy students is of concern as there are a large number of students who are stressed. It is necessary to take measures to tackle the stress in these students thus promoting the betterment of their mental well-being.

Keywords: Stress, Stressors, Perceived Stress Scale, Physiotherapy, Undergraduate, Postgraduate

Stress is the reaction people may have when presented with demands and pressures that are not matched to their knowledge and abilities which challenge their ability to cope. (WHO)

Eustress is good stress or a positive form that promotes an individual to work. Distress is bad stress or when the stress becomes too much for the individual to cope with. (Waghchavare, 2013)

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Evaluation Of Average Length of Follow-Up Duration Post Total Knee Arthroplasty: A Survey

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ABSTRACT

Background: Among the various diseases in the world, osteoarthritis (OA) is a major contributing factor of disability. Total Knee Arthroplasty (TKA) is a widely performed procedure for advanced arthritic joint. Both subjective and objective assessments are necessary to evaluate the outcome post TKA. The physiotherapy treatment program following the surgery is designed in a manner which is suitable to the patient's need, the efficacy of which will only be determined with regular follow up sessions.

Objectives: The primary objective is to find out length of duration of follow up sessions post TKA with the Physiotherapist. The secondary objectives are to determine whether the reason for termination of follow-up is physiotherapist-based or patient-based and to determine whether the discharge criteria are based on measurable assessment tools.

Purpose: In spite of the surgery being routinely performed, records of time period of follow up with the surgeons and physiotherapists are not maintained. It is also not documented whether the discharge occurs on the basis of formal functional assessments.

Methodology: Pilot study was performed on a group of 10 physiotherapists to calculate the sample size. It was found to be 73. For the final study, candidates fitting in the inclusion criteria were chosen. Oral consent was taken. Self-designed questionnaire in the form of "Google-Form" was administered. The candidates were requested to fill the same. Descriptive analysis of the data obtained was performed to find out the average duration of follow-up post Total Knee Arthroplasty using PRISM Graph-Pad software.


Results: Average (median) length of follow-up duration post TKA was found to be 6.000 weeks. Furthermore, the termination criteria of follow-up were more physiotherapist based and objective in nature.

Conclusion: The time period of follow-up post TKA is inconsistent with the minimum period required for optimal functional recovery of various clinical parameters.

Clinical Implication: A standardized protocol of follow-up post TKA must be devised. The decision making process of termination of follow-up which is based on measurable tools of assessment should be in line with current research findings.

KEY WORDS: Total Knee Arthroplasty, Follow-up, Functional Recovery.

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INTRODUCTION

Among the various diseases in the world, osteoarthritis (OA) ranked fourth for the contributing factor of disability. OA is chronic,

degenerative disease of the joint which affects articular cartilage that is associated with swelling, functional deficit. OA affects joints like the knee, hip, ankle, wrist, cervical, and





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Research Article

A COMPARISON OF STRENGTH OF HIP ABDUCTOR MUSCLES IN VOLLEYBALL ATHLETES WITH AND WITHOUT ANKLE SPRAIN – A CASE CONTROL STUDY

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Key Words:

volleyball athletes, ankle biomechanics,
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ABSTRACT

Context: Stability of the hip and hip strength are important for jumping and more importantly landing after a jump in volleyball.

Objective: To compare the strength of hip abductor muscles in volleyball athletes with and without ankle sprain.

Design: Case-control study design

Setting: Community

Participants: A total of 50 volleyball players volunteered for this study. 25 subjects had a history of having unilateral ankle sprain. 25 subjects were age and gender matched healthy subjects. At the time of the study, the subjects with a history of ankle sprains (Cases) had returned to sport and were not undergoing any formal or informal rehabilitation.

Main Outcome Measure: The wireless microFET3 Muscle Testing Hand held Dynamometer was used for assessing the strength of the hip abductors in both limbs.

Results: Within the sprained group, there was a difference in the hip abductor strength in sprained and unsprained limb in case population (p value-0.0003). Within the Healthy group, abductor strength between the limbs was similar. There was no difference between the sprained limb of case population and the control limb abductor strength (p value- 0.732).

Conclusions: There is a difference in the hip abductor strength in sprained and unsprained limb in case population. There is no difference between the sprained limb of cases and the control population. Hip strengthening needs to be incorporated in the protocol post ankle sprain for return to sport.

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INTRODUCTION

Volleyball is one of the exciting, fast, dynamic and most popular sports in the world which is played by approximately 800 million people with diverse characteristics such as: indoors and outdoors, by the young and the old, by males and females.^[1] Further-more, it is unique among team sports in that it has evolved into two distinct Olympic disciplines: an indoor version featuring six players on each team, and a two person per side outdoor game typically played on sand beach volleyball.^[1] It is a sport involving very quick and forceful movements of the body both horizontally and vertically, as jumping, landing, blocking and spiking the ball, and therefore the large and repetitive forces involved in such movements will make injuries inevitably occur. As a consequence, volleyball players are at risk for musculoskeletal injuries like strain

followed by ankle, finger and thumb dislocation, muscle cramp and tendonitis at the ankle knee, shoulder and also back injuries.^[1]

The majority of injuries are of the ankle. A deeper knowledge and amongst them the most common are acute ankle sprain injuries.^[2] Ankle sprains occur during combined ankle movements, such as ankle inversion, adduction, but also plantar-flexion or dorsi-flexion of the ankle, a deeper knowledge of sagittal plane kinematics during jump landings is required to preventing and optimally treat ankle injuries. Most non-contact ankle injuries occur during challenging movements like jumping and running tasks.^[2] These ankle injuries are more often conservatively managed irrespective of pain unless there is a severe injury. The mechanics of the ankle and ankle injury have been studied frequently, and a relationship has been

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Research article

Medical research

Effects of Mulligan's Rotation Mobilization With Movement and taping on knee pain, foot posture and functional status in medial compartment knee Osteoarthritis.

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ABSTRACT

Mulligan's Mobilization With Movement (MWM) and taping techniques are known to be effective in reducing pain, increasing Knee range of motion and improving function in patients with Knee osteoarthritis (OA). This study specifically focussed on determining the effect of Mulligan's Rotation MWM and taping not only on local parameters at the site of application of the glide at the knee, but also distally at the foot. This Quasi experimental study was performed on a purposive sample of 54 individuals responding to Mulligan's Internal or External Rotation glide, in the age group of 50 to 70 years having Grade 2/3 medial compartment Knee OA on Kellgren and Lawrence classification for Knee OA. Outcome measures included the Visual Analogue Scale (VAS) for Knee pain, Navicular Height (NH), Foot Posture Index (FPI), Aggregated Locomotor Function (ALF) Score, Knee Range of motion (ROM) using goniometer, Tibial Torsion Angle and Quadriceps Angle (Q angle) using goniometer. Outcomes were assessed at baseline and 24 hours after application of the last treatment session. All participants underwent treatment sessions of therapist-applied MWM and taping daily for 4 consecutive days after the baseline assessment. Tape was removed prior to the post-intervention assessment. 65% of patients responded to an Internal Rotation Mulligan glide in this study. Statistically significant improvements from baseline were seen in all outcome measures except the Q angle. Knee pain intensity reduced at rest, during lunging and during performance of most-offending movement post-treatment compared to the baseline ($p < 0.001$). Time required for performance of functional activities including locomotion, sit-to-stand and staircase ascending-descending was statistically significantly reduced post-treatment as demonstrated by a lowered ALF score ($p < 0.001$). Foot posture changes seen post-treatment included a statistically significant increase in the NH ($p < 0.001$) and a reduction in the FPI score ($p = 0.021$). A statistically significant reduction in the Tibial torsion angle was seen post-treatment compared to the baseline ($p < 0.031$). In this study conducted in patients with medial compartment Knee OA; Mulligan's Rotation MWM and taping were associated not only with reduced Knee pain, increased Knee range of motion and improved locomotor function; but also changes in foot posture.

Keywords: Knee, Osteoarthritis, Mobilization, Taping, Foot posture



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[Instrument Review]

MicroRPM: Instrument Review**Kumbhar - Sonwane Harshada¹, Prof. Dr. Diwate Abhijit (PhD)²**¹Associate Professor, Deccan Education Society, Brijlal Jindal College of Physiotherapy, Pune²Professor and HOD, Dept. Cardiovascular and Respiratory Physiotherapy, DVVPE's, College of Physiotherapy, Ahmednagar**Introduction :**

Respiratory muscle weakness is observed in number of patients suffering with several neuromuscular diseases and is commonly associated with a higher morbidity and mortality.

Nevertheless, it is one of the compounding factor in conditions such as malnutrition, chronic obstructive pulmonary disease, congestive heart failure, sepsis and could be a possible complication of many metabolic diseases, endocrine disorders, and steroid therapy.

Hence, making it important to assess respiratory muscle strength not only to detect but to quantify its severity of weakness. Respiratory muscle assessment is helpful in finding the causes of unexplained dyspnoea, bulbar problems, and impaired cough, and is also important for the follow-up assessment of progress of patients on respiratory muscle training programmes and is being used in ventilator weaning protocols as well.

Clinical assessment of respiratory muscle strength is difficult and hence justifies the need for objective assessment.

There are many respiratory assessment methods in use, those can be classified as Volitional and Non-volitional. Phrenic nerve electrical stimulation, Magnetic phrenic nerve stimulation, Magnetic stimulation of the cortex, Phonomyography, Transdiaphragmatic pressure assessment, Radiological or Ultrasonographic assessment of diaphragmatic position etc. are the non-invasive methods which detect the strength of diaphragm wherein no requirement of voluntary effort from patient. Moreover, these are non-invasive tests wherein, Oesophageal, gastric, and transdiaphragmatic pressure assessment needs

invasion. Arterial blood gas analysis, Polysomnography are the indirect methods to detect affection of respiratory muscles.

Pulmonary function tests using Spirometry and assessment of Mouth pressures and Sniff pressures using Respiratory Pressure Meter, are the tests that require voluntary efforts from patients and hence results could be influenced by the patient's effort and co-operation while performing these test.

The MicroRPM™ (Respiratory Pressure Meter) is a hand-held instrument designed for rapid, non-invasive assessment of inspiratory and expiratory muscle strength. The unit can measure the maximum inspiratory (MIP) and expiratory mouth pressures (MEP), and the Sniff Nasal Inspiratory Pressure (SNIP). A liquid crystal display screen presents the results of each measurement in units of cmH₂O. Maximal Rate of Pressure Development (MRPD) and Maximal Rate of Relaxation (MRR) also can be measured using this device. Both Adult and Pediatric patients over the age of 3 years can be assessed using this in different testing environments such as hospitals, Outpatient Departments, laboratories, community setting etc.

The MicroRPM device comes with the advanced software PUMA™. It has a user friendly, modern, multi-window visual interface that displays and stores the real-time pressure curves obtained from the assessments of both mouth and nasal pressures.

Maximal cooperation from children can be ascertained as it includes an animated incentive display ensuring the test quality and encourages correct test technique.

Printout of results can be obtained which is selectable and previous pressure curves can be overlaid. These results can be exported and stored

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Research article

Medical research

Immediate and Short-Term Effects of Kinesio Taping on Trunk Control in Children with Spastic Cerebral Palsy: A Repeated Measures Design

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ABSTRACT

Aim: The study aims to investigate the immediate and short-term effects of Kinesio Taping (KT), for an improved sitting trunk control in children with spastic Cerebral Palsy (CP).

Methods: 36 children with spastic CP (age group: 8-15 years), undergoing regular conventional physical therapy program, were assigned to this study. Baseline trunk control was recorded using the Trunk Control Measurement Scale (TCMS). Further readings on TCMS were recorded immediately and shortly after 48 hours of application of Kinesio Tape bilaterally on the parasagittal area.

Results: One-way analyses of variance (ANOVA) test showed statistically significant difference in the trunk control immediately after KT, and after 48 hours of KT, $F(1, 492.52, 21) = 38.44; p < 0.1$.

Conclusion/Significance: The findings in this study demonstrate that the application of KT provides significant functional outcomes in terms of immediate and short-term effects on sitting trunk control in children with spastic CP.

Keywords: Spastic CP, Trunk control, TCMS, Kinesio Taping, Physiotherapy.

INTRODUCTION

Performing everyday activities requires flexible control of posture, meaning that we continuously have to control the position of various parts of our body or the whole of our body in an often-changing environment. Postural control involves controlling the body's position in space for dual purposes of stability and orientation, and is a basis for all components of movements (Rosenbaum, 2006; Hadders-Algra, 1998; Brogren, 1996; Brogren, 2001). Trunk control is a prerequisite for adequate mobility and is critical to subsequent perceptual, cognitive and social development (Stauer, 2015). The static and dynamic trunk control, along with selective movement control are the three aspects of trunk control, which are strongly associated with gross motor function and mobility, thereby allowing activities such as sitting in school for long hours, while eating, reaching out and grasping various objects of requirement, fine motor skills like holding different sized equipment. Postural control is situation-specific and depends on the

degree of instability in the changing environment (Brogren & Bowca, 2008). Maintenance of erect posture requires tonic recruitment of the erector spinae muscle, which shows 70% proportion of type 1 fibers in the thoracic region and 88-99% in lumbar region (Sirca & Kostevc, 1985). During erect sitting in healthy individuals, the property of the muscle changes from tonic to phasic and vice-versa according to the changing requirements of the task as well as that of the environment. Erector spinae muscle, which is superficially located, extends and rotates the neck, extends the spine as well as performs lateral flexion of the spine improving efficiency of the muscular control which in turn helps in achieving the trunk stability while performing dynamic reaching as well as selective trunk control movements (Stauer, 2015; Duarte & Freitas, 2016). Trunk control impairment is an important feature seen in children with spastic Cerebral Palsy (CP) with the major postural dysfunction being the inability to voluntarily activate the activation of these postural muscles in the right sequence (Hadders-Algra, 1998; Heyman et al., 2013).



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