Platform Presentation Abstracts

Physiotherapy in Musculoskeletal Conditions & Sports.

AB No 33: Effect of graded motor imagery on pain, kinesiophobia and disability in chronic shoulder pain patients.

Authors: Vrushali Panhale, Prachita Walankar, Manali Yadav
Affiliation: MGM College of Physiotherapy, Navi Mumbai

Purpose: To investigate the effect of Graded Motor Imagery (GMI) on pain, kinesiophobia and disability in chronic shoulder pain patients.
Relevance: Chronic shoulder pain is a complex and multidimensional phenomena with multiple causative factors involved in its perpetuation. GMI, an important technique in the rehabilitation, aims to restore cortical representation.
Participents: Twenty four subjects in the age group of 40 to 65 years diagnosed with unilateral chronic shoulder pain were recruited. Subjects with partial or full thickness rotator cuff tears, any trauma or surgery of the upper limb were excluded from the study. Written informed consent was obtained.
Methods: Participants were randomly allocated to either GMI or control group. GMI group received sequential treatment in three sections – laterality recognition task, motor imagery and mirror therapy in addition to conventional therapy and control group received only conventional therapy for 4 weeks, 3 sessions per week. The assessments included pain using numerical pain rating scale, kinesiophobia using Tampa scale of kinesiophobia (TSK) and disability using Shoulder pain and disability index (SPADI) were performed pre and post intervention.
Analysis: Statistical analysis was done using SPSS software version 24. P value less than 0.05 was considered as statistically significant. Unpaired test was used to compare the difference in mean values in GMI and control group.
Results: The GMI group showed greater improvement in pain intensity ($p = 0.028$), Tampa scale of kinesiophobia ($p = 0.004$) and SPADI ($p = 0.029$) as compared with the control group using unpaired t test
Conclusion: Thus, we conclude that graded motor imagery can be an effective intervention for the treatment of patients with chronic shoulder pain and provides strong evidence in reducing pain, kinesiophobia and disability.
Implications: Chronic pain requires a comprehensive rehabilitation approach that targets the biopsychosocial model. Graded motor imagery established on a neuroscience basis aims to normalize the cortical proprioceptive representation and reduce pain. Hence, this strategy should be incorporated in the management of chronic shoulder pain patients.

Keywords: Chronic shoulder pain, Disability, Graded motor imagery, Kinesiophobia.

AB No 28: Effect of Mckenzie self-therapy protocol on forward head posture and respiratory functions of school going adolescent girls

Authors: Shreya Joshi, Megha Sheth
Affiliation: SBB College of Physiotherapy

Purpose: Objective of this study was to find the effect of Mckenzie self-therapy protocolon Forward Head Posture (FHP) and respiratory functions of school going adolescent girls.
Relevance: Prevalence of forward head posture is 63% among 12–16-year-old school going students in India. FHP is known to have an influence on respiratory function by weakening the respiratory muscles, thereby decreasing their function.
Participants: Sixty participants in the age group of 13-16 years, school going adolescent girls selected by convenience sampling and randomly allocated into two groups.
Methods: Group A girls were given Mckenzie self-therapy on daily follow up basis and group B was allowed to participate in sports activities at school. Forward head angle was measured by measuring craniovertebral angle, (CVA) by Nikon S3100 on Adobe photoshop CS6. Peak expiratory flow ratewas measured by peak expiratory flow meter in sitting position. Three trials were given to each student and the maximum value was considered. Intervention was given for 12 weeks.
Analysis: Dependent and Independent t-testswere used for CVA and Wilcoxon and Mann-Whitney tests for PEFR to compare data between both the groups. The data were analyzed at 5% level of significance using SPSS.
Results: Difference in mean CVA in group A ($t=-3.77$, $p=0.001$) and for PEFR ($Z=-3.97$, $p<0.01$). For group B for CVA ($t=-0.289$, $p=0.77$) for PEFR ($Z=-3.886$, p,0.01). For between group data for CVA ($t=2.06$, $p=0.04$) and for PEFR ($Z=-0.052$, $p=0.962$).
Conclusion: Significant difference was seen in forward head posture and respiratory function with McKenzie self-therapy. Significant difference was seen in respiratory function with sports activity and the difference in respiratory function was not significant between the groups.
Implications: McKenzie home program can be given to the school going adolescents on daily basis to prevent consequences related to poor neck posture and improvement of respiratory function.

Keywords: Forward head posture, CVA, PEFR, McKenzie self-therapy

AB No 145: Comparison of postural stability in elite and novice recurve archers

Authors: Pranita Ganjave, Ajit Dabholkar
Affiliation: D.Y. Patil school of Physiotherapy Navi Mumbai

Purpose: To compare the postural stability in Elite and Novice Recurve Archers.
Relevance: Archery requires extreme precision, upper body strength and endurance. Besides this, postural stability is another crucial factor determining the outcome of every shot. An archer's skill is the ability to shoot the arrow in a specific time, to achieve this athlete needs to avoid unnecessary sways which can reduce stability. It has been seen that a high level of postural stability increases the aiming stability of the archers. However regardless of their performance level, archers are affected by postural sway. Therefore, the purpose of the present study was
Participants: 50 Novice and 50 Elite Recurve archers between the age group of 15-25 years were recruited.
Methods: Postural stability was assessed using Balance Error Scoring System (BESS). Three stances (double leg stance, single leg stance, and tandem stance) on firm and foam surface were tested. Each of the 20 second trials were scored by counting the errors accumulated by the subject. Leg dominance was determined by Waterloo Footedness questionnaire.
Analysis: The results were analysed using SPSS 16.00. Kolmogorov-Smirnov Test was used for Normality of data. Independent T test was performed for between group comparison.
Results: In between group comparison, Elite archers had significantly less number of balance error on Firm surface (8.62±3.063) p=0.005, foam surface (12.88±2.592) p=0.013 and Total BESS score (21.50±4.921) p=0.001 than novice archers [Firm surface (10.16±2.280), foam surface (14.84±4.842), Total BESS score (25±5.218)].
Conclusion: Elite recurve archers had significantly better postural stability on firm as well as foam surface as compared to the novice archers.
Implications: This study implies that novice archers need to be trained for postural stability to enhance their performance and to make them as good as an elite archer.

Keywords: Archers, BESS, Postural stability

AB No 159: Analysis of forearm muscle work during "DART THROWING MOTION" in young healthy adults

Authors: Tejashree Dabholkar and Nikshita Dsouza
Affiliation: D.Y. Patil University, School of Physiotherapy, Navi Mumbai

Relevance: The DART THROWING MOTION (DTM) is a movement, which includes all the motion of the wrist joint that is extension-radial deviation to flexion-ulnar deviation in an oblique arc. Our study is analysis based which assess the FCU (flexor carpi ulnaris) and ECRL (extensor carpi radialis longus) forearm muscles. Hence study aims at analysis of forearm muscle work during "DART THROWING MOTION"
Methods: Study was done in a standardised environment with the usage of a chair with arm rest and table. Edge of the arm rest was used with the wrist joint at the free endto perfrom the DTM. The study data was recorded on the basis of the trial of the subjects wrist movements with surface electromyography (EMG). The study design was observational cross-sectional study total of 32 participants were choosen for our study which included both female and male study population. Their normal dominant wrist ROM (range of motion) was assessed with a goniometer followed by which the complete ROM was divided in approximately 60 degrees each for the DTM assessment. Surface electromyography was used to assess FCU and ECRL muscle work of the forearm. A set of practice of DTM was given to the subject prior to the assessment. Each trial was taken with the use of metronome beats and percentage MVIC (maximum voluntary isometric contraction) was recorded for the same.
Analysis: Graph Pad Instat software version 3.06 was used for statistical analysis. FCU and ECRL muscle work analysis among the gender was done by using non-parametic, unpaired t-test. Individual arc analysis was done by using repeated measure ANOVA. Whereas, Arc wise analysis was done by using unpaired t-test.
Results: In Female population significant difference was obtained with ($p<0.0001$) in full, initial and mid-arc of the DTM. Siginificant difference obtained in the terminal arc was ($p<0.0038$).In arc wise forearm muscle analysis, the muscle activity of FCU and ECRL was siginificant with FCU ($p<0.0560$) and ECRL ($p<0.0001$) respectively. In Male population however significant difference was obtained in only mid-arc of the DTM ($p<0.0075$).In arc wise forearm muscle analysis, the muscle activity of FCU and ECRL was significant with FCU ($p<0.0040$) and ECRL ($p<0.0408$) respectively.
Conclusion: ECRL muscle activity was consistently higher as compared to FCU in both the gender among the study population. ECRL muscle activity was found to be higher in all the arc's in females, where as in males except mid-arc all arc's showed the same results. In individual arc muscle analysis significant difference was obtained between FCU and ECRL. In females the ECRL muscle activity progressively reduced along the terminal arc with consistent FCU muscle activity. Whereas in males, ECRL muscle activity gradually reduced with increase in FCU muscle activity along the terminal arc.

Keywords: Dart throwing motion, Wrist, Muscle work.

AB No 75: Comparison of muscular endurance among young healthy adults performing fast and slow suryanamaskar

Authors: Suroshree Mitra, Snehal Sawant
Affiliation: Sancheti College of Physiotherapy

Purpose: Suryanamaskar (SN) is one of the oldest and most popular yoga exercise. Fast SN is performed at a quick pace where all 12 postures are held for 10 seconds each and the cycle is completed in 2 minutes and it has an effect alike to that of aerobic exercise. In slow SN each posture is held for 30 seconds and each round takes around 6 minutes.
Relevance: Suryanamaskar may offer an economic and time saving solution for provision of fitness enhancement. Thus it becomes necessary to compare the changes in muscular endurance among young healthy adults after training with slow and fast Suryanamaskar.
Participants: 66 Participants between 18 to 25 years of age and BMI with- in 18 to 24.9 kg/m2 recruited by a simple random sampling.
Methods: Participants were randomly divided into two groups. They underwent training for 6 weeks. Group1 in slow SN and Group 2 in fast SN. Pre and post treatment assessment of participants was done using Bent knee push up test, Half squat test, Curl up test and bilateral straight leg test. Group A held each posture for 10 seconds and the cycle was completed in 2 minutes and Group B held each posture for 30 seconds and completed a cycle in 6 minutes. The number of repetitions were decided by their individual levels of RPE (7 on 10).The session were supervised every once weekly.
Analysis: With-in group analysis was done using paired t test and analysis between both the groups was done with unpaired t test with p set at ≤ 0.05
Results: Significant increase ($p<0.05$) in muscle endurance was seen after training participants with fast and slow SN, in push-ups (for males), modified push-ups (for females); curl up test; bilateral straight leg test and wall squats. In between the two groups the increase in muscular endurance was more significant ($p<0.05$) in fast as compared to slow SN group.
Conclusion: Muscular endurance increases while performing both fast and slow SN wherein increment in fast SN was more as compared to slow SN.
Implications: Determining the speed of SN can help determine its beneficial role in promotion of health in the general population.

Keywords: Physical activity, Suryanamaskar, Physical fitness.

AB No 52: Exploration of Gait kinematics and Balance performance of Bharatanatyam dancers using 3-D Motion Capture system

Authors: Juhi Bharnuke, Rajani Mullerpatan
Affiliation: MGM School of Physiotherapy, MGM Institute of Health Sciences, Navi Mumbai

Purpose: Bharatanatyam, a widely practiced dance form across, involves graceful postures in extremes of joint range-of-motion, away from mid-line, thereby pushing a dancer's body to anatomical and physiological limits. Constant change of base of support from stance to low-jumps and spins forms the framework of Bharatanatyam. High biomechanical demands placed by Bharatanatyam impose risk of developing musculoskeletal dysfunction warranting investigation to understand whether reflections of dance training are observed in common weight-bearing activity such as gait.
Relevance: Identification of kinematic deviations can aid physiotherapists in designing specific exercise-program to enhance musculoskeletal function and improve joint health of dancers.
Participants: Following ethical approval, 20 formally trained Bharatanatyam dancers (dancing age >8years) and 20 healthy age-BMI-matched non-dancers were recruited.
Methods: 3D gait at natural walking speed was captured using12-camera Vicon system (Oxford Metrics Group, UK). Full-body plug-in-gait marker model was used with 39 markers at predetermined anatomical positions. Balance was evaluated in static and dynamic conditions of single and dual-limb stance on a force plate (AMTI, USA).
Analysis: Mid-gait data were processed to obtain kinematics of spine, pelvis, hip, knee and ankle. Joint angles and center-of-pressure trajectory were compared using Mann-Whitney U test.
Results: Bharatanatyam dancers walked with greater spine-extension (27%), anterior-pelvic- tilt (8%), pelvic obliquity (26%), pelvic-rotation (22%), hip flexion (13%), greater hip abduction (16%) as compared to non-dancers. Dancers demonstrated 30%-34% greater stability indicated by shorter excursion of centre-of-pressure trajectory.
Conclusion: Kinematic demands placed by typical dance postures result in exaggerated anterior tilt, increased spine extension, exaggerated hip-abduction and knee-hyperextension while walking. Balance performance of dancers was higher in all conditions of stance compared to non-dancers.
Implications: Implementation of a specific exercise program designed to neutralize excess deviations at pelvis and knee may result in enhanced musculoskeletal health among dancers.

Keywords: Bharatanatyam, Gait kinematics, Balance performance.

AB No 82: Test-retest and intertester reliability of diers (statico 3D) for spinal measurements in healthy young adults

Authors: Simranjeet Kaur, Narkeesh Arumugam, Divya Midha
Affiliation: Punjabi University, Patiala

Purpose: The purpose of the study is to find out the Test-Retest and Intertester reliability of DIERS Statico 3D in

spinal measurements in healthy young adults. To find out the Test-Retest and intertester reliability of DIERS STATICO 3D of spinal measurements (Coronal imbalance, Thoracic kyphosis angle, lumbar lordotic angle and pelvic imbalance) in healthy young adults.

Relevance: DIERS (static 3D) is a Surface Topography system that has non- invasive, noncontact and radiation-free properties. It is a widely used raster stereographic system that produces a 3-dimensional structure of the spine. The patient is examined by the machine that automatically detects the posture of the body in a standing position. The machine emits parallel light lines that are projected onto the surface of the back and the image is detected by a digital camera. This process is contact-free and takes only a few seconds.

Methods: Sixty healthy volunteers were randomly recruited to participate in this study. Inclusion criteria were age 18 to 25. DIERS scan was taken for 4 times for each participant. The volunteer was asked to walk 30 steps in the testing area, in an attempt to standardize the postural condition of the participant after every scan.

Results: Test-Retest, Intertester reliability for Kyphotic angle revealed the highest reliability with the value of Cronbach ά (.966,.887). Good Test-Retest (ά =0694) intertester reliability (ά=.639) for the lumbar lordotic angle. Test-retest reliability (ά=.509) of Pelvic imbalance shows satisfactory reliability and lowest test-retest with (.357) and intertester reliability (.129) for coronal imbalance and intertester pelvic imbalance with (.239).

Conclusion: It can be concluded that DIERS statico 3D has good Test-Retest and intertester reliability for Thoracic Kyphotic and Lumbar Lordotic Angle justifying its utility in the clinical settings as a reliable tool for postural examination.

Keywords: Reliability, Diers Statico 3D, Spinal Deviation.

Physiotherapy in Musculoskeletal Conditions & Sports.

AB No 6: Spinal postures in children sitting on the floor in schools in Ahmedabad District

Authors: [1]Megha Sheth, [2]Nehal Shah, [3]Yash Ahuja, [4]Parth Parmar, [5]Priyasingh Rangey

Affiliation: [1-4]SBB College of Physiotherapy, [5]L.J. Institute of Physiotherapy

Purpose: To assess spinal posture in various positions in school going children where furniture was not available.

Relevance: At some schools in India, children sit on the floor and assume different postures during the class time.

Participants: Sixty two children, boys and girls class 1-8, random selection

Methods: In the cross sectional survey, photographs were taken in four positions**:** A-usual standing; B-usual sitting on floor looking at teacher or board; C-sitting on floor, looking down when writing in book; D-sitting on floor and writing from the blackboard. Markers were placed on anatomical points**:** tragus, canthus, C7 vertebra, T12 vertebra, greater trochanter and the lateral malleolus. Cranio-vertebral angle (CVA), gaze angle, trunk angle and Sway angle in degrees were measured using Surgimap software.

Analysis: Differences in mean angles in various positions were compared using Kruskal Wallis test. Post-hoc analysis was performed using Dunn-Sidak correction test.

Results: Mean CVA in standing (A) was 54.11+7.0 degrees. In B, it was 41.7+9.2 degrees. In position C it was 43.60+43.09 degrees and in D it was 8.8+16.85 degrees. Mean gaze angle in standing was 20.01+9.18 degrees. In B it was 26.99+10.15 degrees. Gaze angle could not be measured when the students looked into their books. In D it was 35.08+9.164 degrees. Mean trunk angle in A was 147.95+9.6, in B was 132.80+10.11, in C was 132.80+10.69 and in D was 128.64+10.80. Mean sway angle was 160.91+7.70 degrees, in standing position. Statistics showed significant difference between the angles in all the different positions ($p<0.001$).

Conclusion: Sitting on the floor in schools without appropriate furniture leads to a significant alteration in spinal postures in school going children.

Implications: Increased stress on neck and back at school may predispose these children to early degenerative changes. Suitable furniture needs to be provided and good posture needs to be taught to children.

Keywords: Cranio-vertebral angle, Gaze angle, Sway angle, Trunk angle, Children.

AB No 24: Overview of running related injuries and their risk factors in Pune based long distance runners

Authors: Simran Chandani, Sona Kolke

Affiliation: Ivolve, Sancheti Institue College of Physiotherapy

Purpose: To study the prevalence of running related injuries (RRI's) and its predisposing factors among long distance runners.

Relevance: Our study findings provide useful insights to health care professionals dealing with sports injuries in identifying the scope of the problem and plausible prevention strategies for RRI's.

Participants: We recruited 161 runners, from marathon expos in Pune, India.

Inclusion criteria-1) Read and understand English, 2) Minimum two years of training experience 3) run at least 25 kms over 3 days per week at a minimum pace of 7 min/km. Exclusion Criteria- Using Foot orthosis or with a history of lower limb corrective surgeries.

Methods: Study design- Observational analytical. Each eligible participant had to undergo a foot assessment (The Arch Ratio and Navicular Drop Test) and were sent an online google questionnaire that gathered running variables and RRI history.

Analysis: Descriptive statistics were used to depict baseline characteristics of participants and a regression analysis was done to identify factors that increase/decrease the risk of developing RRI's.
Results: The prevalence of RRI's was 58% and knee injuries were most common. Type of run (Interval training, OR=0.05, p=0.001), type of surface (Sidewalk, OR=3.26, p=0.048), foot structure (Neutral, OR=0.26, p=0.038) made a significant contribution to prediction of RRI's. Two predictor variables approached significance (Years of running, OR= 1.142, p=0.07 and frequency of shoe replacement, OR=1.06, p=0.06). BMI and type of foot arch were not significant predictors.
Conclusion: Interval training and neutral foot posture are protective factors against development of RRI. Those who run on sidewalk are 3 times more likely to develop RRI. More years of running and infrequent shoe replacement were also risk factors.
Implications: Knowing the factors identified in this study, may contribute to the development of better strategies, to prevent running related injuries.

Keywords: Running Injury, Knee, Interval training, Foot structure.

AB No 25: Effectiveness of trigger point dry needling for specific and non-specific chronic lower back pain

Authors: Keerthana Muthurajan, Geread Greene
Affiliation: IIHS, University of Coventry UK and Harborne Physiotherapy and Acupuncture Clinic

Purpose: To explore the effectiveness of trigger point dry needling for treating pain and disability among specific and non-specific chronic LBP patients.
Relevance: Chronic lower back pain (LBP) has become clinical, social and economic burden globally which demands effective intervention. Trigger point dry needling technique is widely used by many Physiotherapists in day to day practice.
Methods: A Systematic review was designed in order to reveal the answer for the proposed question. CINHAL, MEDLINE, Pedro and AMED were searched individually to gather maximum number of articles using key terms and subject headings between April to August 2018. Studies were screened according to the eligibility criteria and then filtered down to the chosen area of study. Joanna Briggs institute (JMI) appraisal checklist was used to critically appraise the included studies and the results were demonstrated in a narrative presentation.
Results: Out of the 202 articles from the data bases, 44 duplicates were removed. 151 papers were excluded as they were not suitable for the eligibility criteria. Four RCTs and three Quasi-experimental studies were included in the review. Out of the 7 studies, 2 evaluated efficacy of dry needling among specific chronic LBP and 5 investigated among non-specific chronic LBP. Two of the specific LBP falls under low risk of bias and they were positive towards the effectiveness. However, it cannot be confirmed that DN is effective for specific LBP due to the limited number of studies. Overall studies were analysed, and three low risk of bias and four moderate risk of bias were determined. DN combined with other treatment had greater effects in terms of reducing pain, disability, muscle function and kinesiophobia. However, there were no sham control trials to conclude DN alone was effective. Three of the quasi experimental studies had no control group and one of them and one RCT remained neutral towards the efficacy of DN.
Conclusion: Overall, moderate evidence suggest that trigger point DN is effective to relieve pain, disability and kinesiophobia for short-term. However, high quality and long-term follow-up, rigorous studies should be performed to draw conclusions exclusively.

Keywords: Trigger point dry needling, Chronic low back pain, Efficacy.

AB No 86: Effect of varying squat exposure on muscle strength and endurance

Authors: Bela Agarwal[1], Robert van Deursan[2], Rajani Mullerpatan[3]

Affiliation: [1,3]MGM School of Physiotherapy, MGM Institute of Health Sciences, Navi Mumbai, [2]Cardiff University, UK

Relevance: Squat exercises are an integral part of strengthening protocols. Weight training using squats is known to increase strength of lower limb muscles. However, effect of habitual squatting for performing activities of daily living on lower extremity muscle strength remains unexplored. The objective of this study was to explore effect of habitual squatting on muscle strength and endurance.
Participants: Thirty healthy adults (age 30-50 years, BMI 20-30) were recruited following ethical approval. Participants were stratified based on squat exposure into non-squatters, ADL squatters and occupational squatters.
Methods: Squat exposure was quantified using MGM Ground Level Activity Exposure Questionnaire. Lower extremity and trunk muscle strength was evaluated using dynamometry and surface EMG (Trigno Wireless EMG system, Delsys Ltd) from erector spinae, rectus abdominis, gluteus maximus, gluteus medius, vastus lateralis, biceps femoris and gastrocnemius on right side during squat, maximum voluntary contraction and 30 second deep squat test. Root mean square values of muscle activity were computed in Muscle Work software and normalised against MVC for further analysis.
Analysis: Measures of central tendency and dispersion were analyzed. Outcome measures were compared among the 3 groups using ANOVA.
Results: MVC of lower extremity muscles namely gluteus maximus, vastus lateralis and biceps femoris increased linearly with increasing squat exposure. Muscle strength and endurance was greater in occupational squatters as on trunk dynamometry and 30 second deep squat repetitions. Errector

spinae and rectus abdominis were activated to a greater extent during trunk dynamometry in habitual squatters.
Conclusion: Muscle strength and endurance of lower extremity and trunk muscles was higher in habitual squatters indicating that squatting for ADL placed sufficient physiological stimulus for maintaining muscle strength.
Implications: Engagement in ground level activities involving squatting is beneficial for maintaining muscle strength and can be a useful life style modification for maintaining musculoskeletal health.

Keywords: Squat, Muscle strength, EMG.

AB No 87: Assessment of anxiety in injured cricketers
Authors: Bindya Sharma, Yashasree Patil
Affiliation: D. Y. Patil University, School of Physiotherapy, Nerul, Navi Mumbai

Purpose: State anxiety is an unpleasant psychological state experienced by cricketers due to perceived performance stress. It is often an overlooked criterion for return to sports after an injury. There is a need to evaluate presence of anxiety as it leads to physical symptoms and hence injury. Mental training is a very important tool for handling anxiety but there is lack of training which further predisposes players to re-injury.
Relevance: This study aims to evaluate presence of anxiety in injured cricketers and the methods used to handle anxiety.
Methods: 40 injured cricketers were selected based on inclusion and exclusion criteria. A baseline questionnaire was prepared to collect basic demographic data, injury related information and mental training practices. Sports Anxiety Questionnaire (SCAT) which is a self-administered scale was then administered to determine presence of anxiety.
Analysis: Anxiety scores were calculated. A score of less than 17 indicates a low level of anxiety, 17 to 24 indicates an average level of anxiety, and more than 24 a high level of anxiety.
Results: It was found that 65% players experience high anxiety, 32% had average anxiety and 3% had low anxiety levels. All the players reported practicing mental skills for general performance enhancement. 46% practiced positive self talk, 37% practiced goal setting, 9% practiced imagery and 8% practiced physical relaxation techniques.
Conclusion: Undiagnosed anxiety was found to exist in injured cricketers which may predispose them to re-injury. All the players were aware of mental training but reported lack of proper guidance and professional help.
Implications: The findings of this study can help physiotherapists to identify anxiety as a potential risk for re-injury. It also highlights the importance of mental rehabilitation along with physical rehabilitation.

Keywords: Anxiety, SCAT, Mental skills training.

AB No 90: Kinematics of Suryanamaskar
Authors: [1]Triveni Shetty, [2]Rajani Mullerpatan, [3]Bela Agarwal, [4]Girish Nehete, [5]Omkar Subbaramajois Narasipura.
Affiliation: [1-4]MGM School of Physiotherapy, MGM Institute of Health Sciences, Navi Mumbai, [5]Indian Institute of Management, Madras

Purpose: To explore kinematics of spine and lower extremity during Suryanamaskar to enhance greater understanding for prescription in management of musculoskeletal disorders.
Relevance: Speculated positive benefits of Suryanamaskar make it a potentially feasible, simple exercise in time and space constraint settings for management of people with musculoskeletal disorders.
Participants: Following approval from Institutional Ethical Committee, 10 healthy, trained yoga practitioners, practicing for >5 years, with no neuro musculoskeletal complains were recruited.
Methods: Three dimensional motion was captured with 12-camera Vicon system using 39 retro reflective markers. Five dynamic trials of Suryanamaskar were captured, and data were processed using plug-in-gait model.
Analysis: Joint angles during 12 poses were computed within Vicon Nexus. Descriptive statistics were used to analyse Kinematics of 12 poses
Results: Symmetrical joint motion was observed in all poses with exception of asymmetrical Ashwasanchalanasan (pose 4 and 9). Spinal excursion through 12 poses ranged from 58° flexion to 44° extension. Hip joint moved through 134° flexion to 15° extension and knee flexed maximally upto 140°. Ankle moved through 40° dorsiflexion to 10° plantarflexion.
Conclusion: Suryanamaskar moves almost all body joints by stretching soft tissues through 12 poses and challenges postural balance mechanisms through wide excursion center of mass in vertical and transverse planes.
Implications: Suryanamaskar can be included in rehabilitation programs for improving mobility and postural control in people with impaired balance and musculoskeletal disorders.

Keywords: Kinematics, Lower extremity, Spine, Suryanamaskar.

AB No 109: Effects of burst-type Transcutaneus Electrical Nerve Stimulation and Myofascial release on cervical range of motion and myofascial trigger point pain sensitivity on upper trapezius
Authors: Soumyadeep Roy, Tapas Kumar Pal, Tanusree Basak, Shabnam Agarwal
Affiliation: Nopany Institute for Healthcare Studies

Purpose: MTrP is very frequent in trapezius muscle. Common causes of upper trapezius MTrP are prolong uncomfortable position of upper limb and neck, carrying heavy loads and physical demanding work.
Relevance: Myofascial release (MFR) therapy focuses on releasing muscular shortness and tightness. There are changes in the viscosity of the ground substance to a more fluid state which eliminates the fascia's excessive pressure on the pain sensitive structure and restores proper alignment. This technique acts as a catalyst in the reduction of trapezius spasm. TENS is a method of electrical stimulation which primarily aims to provide a degree of symptomatic pain relief by exciting sensory nerves and thereby stimulating either the pain gate mechanism and/or the opioid system. Studies found that Burst type TENS and MFR have been established as suitable treatment methods in upper trapezius MTrP patients, but the combination of TENS and MFR have not been exclusively explored. Hence this study has been undertaken to evaluate the effect of burst type TENS and MFR in improving pain, cervical range in patients with upper trapezius MTrP.
Methods: Participants (n=30) of both sex with MTrPs present over bilateral upper trapezius muscle, between the ages of 18 to 30 years were included in this study. They were treated with burst type TENS and MFR for a duration of 5 days.
Outcome measures: a) Pain pressure algometry b) Spin-t Digital Goniometer
Analysis: The pre and post data was analyzed using student t-test.
Results: The Pain Pressure Threshold (PPT) and Cervical lateral flexion Range of motion (ROM) was measured before the treatment, after completion of 5 days treatment and with 15 days of follow up. The data collected was analysed using student t test. The ROM of cervical lateral flexion was measured before and after the course of treatment. Student t test showed significant increase in the ROM on mean cervical lateral flexion ($p<0.05$). 15 Days follow up done and there were no drop outs. The mean PPT values of post treatment and 15 days follow-up showed no changes signifies improved pain status even after 15 days.
Conclusion: Based on the results of this study, five sessions of burst type TENS with combination of myofascial release had hypoalgesic Referred Pressure Pain Threshold (RPPT) over MTrPs in bilateral upper trapezius muscle and in 15 days follow-up there is no change in pain sensitivity of MTrPs. There was also improvement in bilateral cervical lateral flexion range of motion.
Implications: This signifies the effectiveness of Burst TENS and myofascial release technique over MTrP duration of 5 days and this can be the ultimate dosimetry for treating MTrPs of upper trapezius muscle.

Keywords: MTrP, Myofascial Release, Burst- TENS.

Physiotherapy in Cardiopulmonary, Gynecologial Condition, Life Style Disorders

AB No 130: Effect of pilates versus stretching for reducing pain in primary dysmenorrhoea in college students. - A comparative study

Authors: Minal Solanki[1], Chaitali Shah[2], Zainab Bariya[3]
Affiliation: [1]Sarvajanik College of Physiotherapy, [2,3]Parul University

Purpose: To compare whether Pilates is more effective over Stretching exercise for reducing pain in patients suffering from primary dysmenorrhoea.
Relevance: Many studies have reported that techniques like Stretching and Pilates are effective for improving the pain & thereby improve dysmenorrhoeal symptoms, but there are very few studies that conducted to find which one is more effective.
Participants: 60 college girls between 18-25 years of age, NPRS 5 or above, experiences dysmenorrhoea on 1st day of menstrual period, do not take any pain killers and have normal menstrual cycle were randomized into two groups.
Methods: Subjects who were willing to participate in the study and satisfy the inclusion and exclusion criteria were divided into 2 groups (Group A & Group B) on a random basis. Group A subjects were treated with Pilates exercises and Group B with Stretching exercises. The outcomes assessed in terms of Numeric pain rating scale, Verbal multidimensional scoring system, Premenstrual syndrome scale, Pictogram at the end of 8 weeks. Experimental sessions (each of 30mins) were conducted three times in a week for duration of 8 weeks. Post test of study was done on the first day of the next menstruation cycle.
Analysis: In both Group all data was statically analyzed using paired "t" test and independent "t" test to determine statistical difference among the outcome parameters at 0.05 level of significance.
Results: Statistical data of NPRS, VMSS and PBCs measured. Result shows that Group A (Pilates exercise) differ from Group B (Stretching exercise) with 0.05; i.e.95% of significance.
Conclusion: From above study we can conclude that including Pilate's exercise leads to significant reduction in pain-severity and bleeding-volume among college girls suffering from primary dysmenorrhoea. Patients who had undergone Pilate's exercise showed better results compared to patients who received only Stretching exercises.
Implications: For physiotherapy practice.

Keywords: Primary dysmenorrhea, Pilates exercise, Stretching exercise.

AB No 84: Feasibility of physical fitness assessment for healthcare professionals in a workplace setting: A cross-sectional analysis

Authors: Ghazala, Savita Ravindra, Sundar Kumar Veluswamy
Affiliation: Department of Physiotherapy, Ramaiah Medical College

Relevance: High prevalence of cardio-metabolic risk factors including low physical fitness among healthcare professionals is well documented. Workplace is a recommended site for intervention in improving physical fitness. Though many institutions have annual health screening program for their employees, physical fitness assessment is not a part of standard health screening programs. The nature of physical fitness tests and time could be a deterrent in including them in screening programs. This analysis aimed to assess the feasibility of physical fitness assessment among employees within the working hours. If found to be feasible, it could lead to planning and integration of physical fitness assessment in annual health screening programs.
Participants: Forty Nurses (mean age 38.2±5 years) volunteered to participate in an ongoing study testing the efficacy of workplace health promotion strategy.
Methods: After ethical approval, due administrative permission and written informed consent, volunteers were screened and assessed for possible risk of exercising, Physical activity, Fasting blood glucose, and VO2. Time taken to complete the screening and assessment were noted.
Analysis: Age, FBS, VO2, BMI categories and physical activity status were summarised using appropriate descriptive statistics. Time taken to complete the screening and assessments were documented to which time taken to assess flexibility and grip strength (obtained from previous work) was added. Feasibility was assessed using man power, infrastructure and time requirements and extrapolated a larger population.
Results: Among the nurses tested; 50% were overweight/obese, 40% were prediabetic or diabetic, 77.5% were physically inactive, and 80% had poor or very poor cardio-respiratory fitness. Time-in to time-out per participant for all components of physical fitness screening and assessment was 30 minutes. If a dedicated team of four trained therapists were allocated to conducted fitness assessments for four hours/day; it would take about 30 days to assess all the 1000 nurses in the institution.
Conclusion: The nurses in this analysis exhibited poor health indicators, emphasising the need for workplace health promotion program. Fitness assessment is feasible in workplace, but requires considerable time, man power and infrastructure.
Implications: Including fitness assessment as part of health screening has its challenges and would require institutional policies and leadership support to be executed.

Keywords: Health screening, Cardio-respiratory fitness, workplace.

AB No 21: Correlation of duration of diabetes with ankle muscle strength, balance performance, and spatiotemporal gait parameters in type ii diabetic peripheral neuropathy population in the age group of 45-60 years

Authors: Prajakta Dingle, Sandhya Wasnik
Affiliation: All India Institute of Physical Medicine and Rehabilitation

Purpose: Diabetic patients with Diabetic peripheral neuropathy (DPN) develop motor dysfunction balance and gait impairments which can further deteriorate. Balance and gait are complex task, simple tests are not appropriate for comprehensive assessment of patients. However, duration of diabetes and poor metabolic control are well-known risk factors for development of diabetic polyneuropathy. The symptoms might influence the clinical outcomes and the severity of these symptoms. Hence the need arises to carry out this study.
Relevance: Understanding the contemporary clinical course of diabetes in older patients is the critical step required to individualize and prioritize care, and target support for future research efforts.
Participants: 200 subjects, divided in; Group A-T2DPN and Group B-Non diabetic population. Group A**:** Subjects with Type II diabetic mellitus, Michigan Neuropathy Screening Instrument (MNSI) test > 8, age group 45-60years, duration > 5year, glycemic control < 200mg/dl, recruited in the study. Group B age matched subjects without diabetes mellitus. Clinical manifestations of musculoskeletal, central/ peripheral neuromuscular disorder, history of diagnosed foot ulcers 6 months before the study, amputation, Cardiac disease, using assistive devices, excluded from study.
Methods: Ankle muscles strength (peak torque), assessed using biodex system 4pro. Balance assessment**:** four step square test, Berg Balance Scale (BBS), Mini BESTest. Spatiotemporal gait parameters**:** cadence, step length, speed were assessed using Nagasaki et al procedure.
Analysis: Normality test not passed, hence Spearmen's correlation.
Results: Correlation**:** ankle muscle strength with duration(r =-0.6), duration with BBS and Mini BESTest, (r=- 0.2, and r=-0.3), duration with cadence and speed (r= 0.2, r= 0.1).
Conclusion: Long duration of diabetes mellitus is strongly associated with deterioration of ankle muscle strength, and weakly correlated with balance performance (BBS and Mini BESTest) and spatiotemporal gait parameters (cadence and speed).
Implications: Ankle muscle strengthening can be carried out to improve balance performance and spatiotemporal gait parameters.

Keywords: T2DPN, Ankle muscle strength, Balance Performance.

AB No 44: Comparison of effectiveness of home based verses supervised pelvic floor muscle exercise (PFME) in women with urinary incontinence

Authors: Daxa Mishra[1], Smruti Vainshav[2], Ajay Pathak[3]
Affiliation: [1]K M Patel Institute of Physiotherapy, [2]Pramukhswami Medical College, [3]H M Patel centre for Medical care and Education

Purpose: To evaluate the usefulness of home based physiotherapy in management of urinary incontinence.
Relevance: Urinary incontinence (UI) is a significant health problem with serious physical, psychological, and social consequences. Pelvic Floor Muscle Exercise (PFME) is proven efficacious in prevention and management of UI. Lack of trained physiotherapist in rural area mars the uptake of physiotherapy and some innovative mechanisms are required.
Participants: A total of 49 women screened positive for UI from a larger study conducted in 4 randomly selected villages of Charutar region were included in the study.
Methods: The 49 women were assigned Home based or supervised regimens randomly. All participants received education about UI and its management. A structured PFME schedule was developed. Participants in the supervised group received PFME by a trained physiotherapist while those in Home based group received training on exercise. Details of each session was documented through daily diary in both groups. Revised Urinary Incontinence Scale (RUIS) and Incontinence Impact Questionnaire (IIQ-7) was administered at baseline and after 6 months to assess and compare the impact across groups. The study was approved by institutional ethics committee and also registered with Clinical Trial Registry of India.
Analysis: Analysis of variance (with post-hoc comparisons) was employed to compare effect of physiotherapy across groups.
Results: Only 18(10 Supervised and 8 Home based group) out of 49 women participated. Another 10 provided the required data albeit not done any exercise. The mean (SD) RUIS (p=0.84) and IIQ-7(p=0.55) scores were similar at baseline across groups. The RUIS (p=0.01) and IIQ-7(p=0.006) improved significantly. However, post-hoc analysis revealed that both RUIS and IIQ-7 improved significantly only in supervised group.
Conclusion: Supervised exercise worked better whereas Home-based exercise failed to achieve desired impact.
Implications: Identifying barriers in Home-based exercise and finding feasible solutions would prove a breakthrough in management of UI in resource limited settings.

Keywords: Urinary Incontinence, Physiotherapy, Randomized Control Trial.

AB No 112: Effect of chest binder on kinesiophobia in coronary artery bypass grafting (CABG) patients, over a period of one month: A prospective experimental study

Authors: Megha Joshi, Rajani Pagare
Affiliation: D. E. S. Brijlal Jindal College of Physiotherapy, Pune

Purpose: To assess the effect of chest binder on the level of kinesiophobia in CABG patients over a period of one month.
Relevance: 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.
Participants: Total 70 (50 – males, 20 – females) post CABG via median sternotomy, hemodynamically stable patients, aged between 40 – 70 years, with TSK – SV scores > 37 were included.
Methods: On the 4th post operative day, patients were assessed for pain using VAS and level of kinesiophobia using TSK – SV Heart. The patients were divided in to two groups according to the prescription of chest binder by their surgeons as Group A (with binder), Group B (without binder). One month after 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. P value < 0.05 was considered to be statistically significant.
Results: A significant reduction in kinesiophobia was observed in patients with using chest binder (P– value = 0.00001188) and without using chest binder (P– value = 0.00007886).
The reduction in kinesiophobia in patients with binder is significantly more than those without binder. (P– value = 0.007921).
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.
The future study should be conducted on larger sample size and also include the patients undergoing median sternotomy due to various cardiac surgeries like Valve replacement, correction of congenital heart defects.
Implications: Use of chest binder is recommended in patients who have kinesiophobia to encourage their participation in exercise based cardiac rehabilitation.

Keywords: Kinesiophobia, CABG, Chest binder.

AB No 45: Development of MGM ground level activity exposure questionnaire

Authors: [1]Bela Agarwal, [2]Manisha Advani, [3]Pooja Nagori, [4]Kishore Raut, [5]Robert van Deursen, [6]Rajani Mullerpatan
Affiliation: [1-4,6]MGM School of Physiotherapy, MGM Institute of Health Sciences, Navi Mumbai, [5]Cardiff University, UK

Purpose: Across most cultures worldwide daily physical activity includes some form of ground-level activity like squatting, cross-leg sitting and kneeling. Existing physical activity questionnaires are not designed to record exposure to ground-level activity. Therefore present study aimed to develop a valid and reliable interview based questionnaire– MGM Ground Level Activity Exposure Questionnaire (MGMGLAE) to quantify exposure to ground-level activity involving high flexion postures.
Participants: An interview based survey was conducted, through convenient sampling, inclusive of 650 people (age**:** 30-60yrs) from urban and rural areas.
Methods: The questionnaire was developed through literature search, item generation and a two-round modified Delphi survey. Respondents provided information on daily, monthly, annual and previous exposure to ground-level activity.
Analysis: MGMGLAE was assessed for content, construct, discriminant validity and reliability.
Results: MGMGLAE was observed to have excellent content validity (Cronbach's alpha 0.916). Principal factor analysis revealed that squatting for selfcare, ADL, occupation, sport, leisure, cross-leg-sitting for self care and instrumental ADL explained 75% variance in daily exposure (Chronbach's α 0.754). Discriminant validity was established by ability of the questionnaire to differentiate between people having varying squat exposure.
Conclusion: MGM GLAE Questionnaire emerged as a reliable and valid tool in quantifying exposure to ground-level activity requiring adoption of high flexion postures. Bearing in mind a recall element in all self-reported tools, further studies need to be carried out for ascertaining criterion validity of the tool.
Implications: This first tool of its kind can be used by health-care practitioners to measure quantum of ground-level activity exposure culturally relevant to Indian population. Deterioration in function among people with musculoskeletal disorders or improvement in ground-level activity following rehabilitation programs can be determined objectively.

Keywords: High flexion activity, Aquat, Physical activity, Questionnaire.

AB No 131: Effectiveness of Active intervention of physical rehabilitation in children with acute lymphoblastic leukemia (ALL)

Authors: Bijal Dodia, Aashish Contractor
Affiliation: Sir HN Reliance Foundation Hospital

Purpose: Impaired physical fitness has been reported during and after cancer treatment which typically involves multiple side effects, decreasing the productivity of the growing child. Exercises including endurance, strength, balance and flexibility training given during or soon after the cancer treatment have the potential to combat the side effects & improve quality of life in children with ALL. The aim is to assess the effect of active intervention of physical rehabilitation in children with acute lymphoblastic leukemia
Participants: 25 children diagnosed with ALL, aged 6-14 years referred for Rehabilitation by oncologist out of whom 20 participated in a 6 weeks exercise program consisting of weight bearing exercises, aerobic, strengthening and balance training in consolidation phase of chemotherapy. Symptoms included loss of joint range of motion, postural dysfunction, gait disturbances, muscle weakness, balance & co-ordination deficits, poor endurance & fatigue.
Methods: A tailor-made comprehensive exercise program was devised for each child which included strength, balance, flexibility and endurance training. A home based activity program was devised for each child.
Pre & post treatment analysis of scores was done on before & after 6 weeks.
Outcome measures: Timed up and go test (TUG), Six minutes' walk test distance (6MWTD) and Pediatric Quality of life inventory (PedsQL) version 4.0
Analysis: Paired't' test was used for the quantitative analysis of data.
Results: After 6 weeks of training, there was a statistically significant difference in TUG values & PedsQL scores ($p<0.05$), whereas the 6MWTD was not statistically significant within the group.
Conclusion: An active intervention of physical rehabilitation in children with ALL is beneficial in improving mobility, balance & quality of life
Implications: Active physical therapy intervention is recommended to be an integral part of treatment of childhood cancer.

Keywords: CPPS, Pelvic floor, Manual therapy.

Physiotherapy in Cardiopulmonary, Gynecologial Condition, Life Style Disorders

AB No 8: Evaluation of respiratory muscle strength in patients with heart failure

Authors: Veena Nambiar, Nagamalesh U.M, Mukta Pitambare
Affiliation: M.S. Ramaiah Medical College and Hospitals, Bangalore

Purpose: The left ventricular impairment in chronic heart failure causes respiratory muscle weakness, dysfunction and skeletal muscle myopathy causing exercise intolerance, dyspnoea and fatigue. Respiratory muscle strength assessed by maximal inspiratory and expiratory pressure (MIP and MEP) is not routinely evaluated in these patients which is crucial and there is scarce literature in Indian context.
Relevance: Reduced respiratory muscle strength has been hypothesized to be a predictor of mortality in heart failure and needs to be assessed and trained during cardiac rehabilitation. The judgement of prognosis after heart transplant depends on peak oxygen consumption and is determined by cardiac output, pulmonary and skeletal muscle function.
Participants: 25 Individuals with Heart failure, clinically stable, 30 to 70 years of age with ejection fraction less than 35% were recruited by convenience sampling from cardiology unit.
Methods: Case control study and experimental method of data collection. Heart failure subjects formed the cases and age and gender matched normal in the control group. MIP and MEP was measured using pressure meter for both groups.
Analysis: Quantitative parameters, MIP and MEP were expressed as mean and standard deviation. Difference in mean values between groups was tested for statistical significance by employing student t-test.
Results: There was a significant decrease in both MIP and MEP ($p< 0.001$) in heart failure group.
Conclusion: Respiratory muscle strength was significantly reduced in Heart failure patients as compared to their age matched normal.
Implications: Respiratory muscle strength should be assessed in heart failure patients. Also post transplant outcome may be influenced by their level of pre transplant pulmonary function and strength. Future work**:** Respiratory muscle strength training needs to be incorporated in cardiac rehabilitation to help reduce dyspnoea, fatigue, exercise intolerance, improve functional capacity and prognosis.

Keywords: Chronic heart failure, Respiratory muscle strength, Maximal respiratory pressures.

AB No 17: A valid and robust multiple-choice examination for assessing competent physiotherapy practice

Authors: Beatrice Tucker[1], Sonya Davis[2]
Affiliation: [1]Curtin University, [2]Australian Physiotherapy Council Limited

Purpose: To develop a valid and robust process for creating the written component of the assessment of overseas qualified physiotherapists seeking registration to practice in Australia
Relevance: Candidates who successfully complete the Australian Physiotherapy Council's (the Council's) assessment process, are eligible to apply for General Registration, to work as Physiotherapists in Australia.
Participants: The participants are a question writing panel comprising 15 national subject matter experts, three experienced Council Assessment Committee members, and an Assessment Manager from the Council. Writers are selected through a committee review process, based on their expertise.
Methods: Writers receive training in the development of good quality multiple-choice questions and submit new questions biannually, mapped to a blueprint. In a workshop setting, questions undergo a rigorous peer moderation process, to ensure the appropriate scope and standard. The committee members facilitate the reaching of consensus prior to undertaking a final review, before each examination. After each examination, questions undergo psychometric analysis to measure their performance. If a question does not perform optimally, it is returned to the writer for review. The revised question is then taken through the peer and committee review process again.
Analysis: Seven examinations comprising 120 questions were developed over 18 months. Psychometric analysis of each examination incorporates question performance.
Results: From 2017 – 2019, an average of 98.6% of questions performed optimally.
Conclusion: A high-quality online examination that assesses components of the Australian Standards for Physiotherapy has been successful implemented by the Council.
Implications: The increased size of the question bank allows for the transition to Computerised Adaptive Testing (CAT).

Keywords: Online examination, Multiple-choice questions, Peer moderation, Psychometric analysis.

AB No 138: Association of nicotine dependence with respiratory muscle strength and 6 minute walk distance in adult smokers

Authors: Shreya Dhake, Priya Joshi
Affiliation: D.E.S. Brijlal Jindal College of Physiotherapy, Pune

Purpose: Tobacco smoking has deleterious effects on respiratory system, which reduces lung volumes and respiratory muscle strength. Lower lung volumes also show reduction in the exercise tolerance.
Relevance: Cigarette smoking can affect the respiratory muscle strength and functional capacity in smokers, which are the important aspects for assessment and intervention in physiotherapy.
Participants: 108 subjects, both males and females were selected by convenient sampling, according to their inclusion and exclusion criteria.
Methods: This was a cross-sectional observational study. Subjects were asked to fill Fagerstrom test of nicotine dependence (FTND) questionnaire. Respiratory muscle strength was assessed in the form of Maximal inspiratory pressure (MIP) and Maximal expiratory pressure (MEP) with

Micro RPM. Functional capacity was determined by 6MWD according to American Thoracic Society guidelines.
Analysis: Spearman rank order correlation coefficient was used as statistical test.
Results: Correlation of FTND with MIP**:** The r value was 0.221 and p value was 0.021, which showed weak positive correlation of nicotine dependence with MIP.
Correlation of FTND with MEP**:** The r value was 0.096 and p value was 0.323, which showed weak positive correlation of nicotine dependence with MEP.
Correlation of FTND with 6MWD**:** The r value was -0.192 and p value was 0.046, which showed weak negative correlation of nicotine dependence with 6MWD.
Conclusion: This study showed early affection of 6MWD in adult smokers as compared to respiratory muscle strength. Future work**:** Evaluation of respiratory muscle strength and 6 minute walk distance can be done in subjects with high nicotine dependence. Effects of different treatment strategies for training respiratory and peripheral muscles in smokers can be done.
Implications: Functional capacity training in smokers. Regular respiratory muscle strength evaluation in smokers which might identify the onset of respiratory disease. Strength training of respiratory and peripheral muscles in smokers to prevent delirious effects of smoking.

Keywords: FTND, Respiratory muscle strength, 6MWD.

AB No 67: Respiratory status and functional capacity in a head and neck cancer patient during chemoradiotherapy - A case report
Authors: Miss Macrina D'Souza, Stephen Samuel, Gopala Krishna, Santosh Rai, Pu Saxena
Affiliation: Manipal Academy of Higher Education.

Purpose: Reduced physical and functional capacity is one of the main treatment related side effects of chemoradiation therapy in head and neck cancer patients. We evaluated a case of a head and neck cancer patient who was undergoing chemoradiation and was assessed for various components of cardiopulmonary function that plays a vital role in the treatment prognosis.
Relevance: In this case study we discussed and quantified the impact of treatment related side effects on the patients' respiratory system which can help indicate early rehabilitative and respiratory care needs in this population.
Participants: A 60 year old male diagnosed with supraglottic carcinoma, who underwent radiation of 70 Gy/35# and 7 cycles of chemotherapy Inj. Kemoplat 65mg in 250ml NS IV one hour weekly for 7 weeks, was selected and evaluated from among the newly diagnosed and admitted to the hospital care.
Methods: Diaphragm function (mobility and thickness) was assessed using the ultrasound, maximal inspiratory (MIP) and expiratory (MEP) pressures were measured using the Micro Respiratory pressure measurement device (MicroRPM) and to evaluate the functional capacity 6 minute walk test (6MWT) was performed. All these outcomes were assessed from baseline (pre), after 3weeks and after 7 weeks of chemoradiation therapy.
Analysis: The data was quantitatively analysed to interpret the difference of respiratory functions and functional capacity.
Results: Evaluation of outcomes i.e. diaphragm mobility, and respiratory function (MIP, MEP) and functional capacity showed significant decrease through the course of radiation from baseline till the end of 7th week.
Conclusion: In this case study we observed that concomitant chemoradiation therapy substantially decreased the respiratory functions and functional capacity in the head and neck cancer patient.

Keywords: Cancer, Head and Neck, Respiratory function, Chemo radiation.

AB No 137: Multimodal physiotherapy for chronic pelvic pain syndrome (CPPS); A case series
Authors: Bijal Dodia, Aashish Contractor
Affiliation: Sir HN Reliance Foundation Hospital

Purpose: To describe biopsychosocial assessment and multimodal physiotherapy in two men with Chronic CPPS which is often treated unsuccessfully by biomedical model approach with pharmacotherapy focus.
Relevance: CPPS is a diagnosis of exclusion relying on thorough examination of multiple pelvic systems with attention to the relevance of psychosocial factors. Pelvic muscle tension is recognised as a potential contributing factor for which physiotherapy is recommended.
Participants: Two men (ages 45 and 53) diagnosed with prostatitis, referred by urologists following unsuccessful pharmacologic treatment.
Key symptoms included sharp pain in the perineum, aggravated by sitting more than 10 minutes, post ejaculation pain and sexual dysfunction. Both had pain for longer than 3 months.
Methods: A biopsychosocial assessment identified depression, altered physical, mental and social wellbeing status, poor general fitness and tension within pelvic floor muscles which reproduced pain symptoms. Treatment included manual therapy techniques for pelvic floor muscles, progressive muscle relaxation for local muscle and general relaxation practice, exercise for fitness and flexibility, and pain education.
Outcome measures: The National Institute of Health Chronic Prostatitis Symptom Index (NIH-CPSI), Numerical pain rating scale (NRS), the patient reported outcomes measurement information system (PROMIS) & the Pelvic pain symptom survey (PPSS) were administered before treatment and after 12 therapy sessions in 6 weeks.
Analysis: Percentage change for each outcome measure was calculated.

Results: For patient 1 and patient 2, the NIH-CPSI improved 46% and 42%, NRS**:** 80 %(both) and PPSS 75% and 60%, PROMIS
Patient 1 Pre Post
Depression 76 42
Pain behavior 68 50
Pain interference 74 49
Physical function 31 50
Patient 2 Pre Post
Depression 71 51
Pain behaviour 66 35
Pain interference 68 39
Physical function 30 56
Conclusion: A multimodal physical therapy intervention appeared to be beneficial to patients suffering from CPPS by improving pain, quality of life and sexual dysfunction.
Implications: Physical therapy could be considered as one of the mainstay treatment of CPPS.

Keywords: Chronic pelvic pain syndrome, Pelvic floor, Manual therapy.

AB No 101: Influence of different sitting positions on the maximal respiratory pressures in healthy individuals of various age groups

Authors: Sneha Koraith, Rajani Pagare
Affiliation: D.E.S Brijlal Jindal College of Physiotherapy, Pune

Purpose: Variation in the position of the body influences the orientation and length of the muscles. The ability of the respiratory muscle to generate force depends upon its length. There is a dearth of literature about the effect of pressures generated due to the different sitting positions.
Relevance: Due to the importance of body positioning in the optimization of breathing exercise, a need was felt to compare maximal respiratory pressures in different sitting positions and identify a suitable position in which the respiratory muscles work the best.
Participants: 144 participants selected according to the inclusion and exclusion criteria by non-random convenient sampling. They were grouped into 3 groups of 18-40yrs, 41-60yrs and 60yrs and above. Equal representation was given in each age group for sample number and gender.
Methods: The maximal inspiratory pressure (MIP) and maximal expiratory pressure (MEP) was measured in the upright sitting, semi-fowlers position and forward leaning positions using the Micro RPM (Micro Medical/Care Fusion, Kent, United Kingdom). A rest period of 1minute was given between each trial and 10mins rest period was given between each position.
Analysis: The MIP and MEP was measured in the upright sitting, semi-fowlers position and forward leaning positions in all age groups and the analysis was done with One-Way ANOVA test.
Results: There is a significant difference in the values of MIP and MEP in different sitting positions in all age groups with 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.
Implications: 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.

Keywords: Maximal respiratory pressures, MIP, MEP, Sitting positions.

AB No 104: Abdominal muscle activity patterns during forced exhalations following elective laparotomy: A pilot study

Authors: Shraddha Shah, Vaishali K, S. S Prasad and Abraham Samuel Babu
Affiliation: Department of Physiotherapy, MCHP, Manipal Academy of higher education, Manipal, Karnataka

Purpose: To assess the trends in abdominal muscle activity and its correlation to peak expiratory flow rate (PEFR) in participants undergoing elective laparotomy.
Relevance: Following a laparotomy, there an ineffective cough due to pain. However, the assessment of muscle activity and its impact on inefficient cough has not been studied.
Participants: Participants age >18yrs undergoing first elective laparotomy were included. Those who were hemodynamically unstable, requiring ventilation, having abdominal distension or obese were excluded.
Methods: Maximal voluntary contraction (MVC) from surface electromyography (Preop, POD1, POD3 and POD7) for transverse abdominis (TrAb), external oblique (EO) and rectus abdominis (RA) was recording during forced exhalation while measuring PEFR.
Analysis: Data was analysed using SPSS v.25 with descriptive statistics, repeated measures ANOVA and Pearson Correlation.
Results: Nine participants (mean age**:** 57.89±9.7yrs) had normal baseline function. MVC for TrAb was seen to increase initially (7%) and come down to near normal by POD7 with no difference from baseline ($p>0.05$). MVC for EO increased significantly by 34% initially and did not return to pre-op values ($p>0.05$). For RA, MVC was seen to drop 24% and remained low at POD7 ($p>0.05$). These were reflected in PEFR which continued to remain low when compared to preop measurements (213.33±58.53L/min vs. 266.66±84.40L/min; $p<0.05$). Moderate to strong, significant correlations were seen between the MVC of EO to PEFR on POD1 and POD3 and MVC of RA with PEFR on POD2 and POD3.

Conclusion: Following a laparotomy, muscle activity EO was high, while that of RA and TrAb were low.
Implications: Early strengthening and recruitment of EO preop and that of RA post-op may improve cough.

Keywords: Abdominal muscle activity, Laparotomy, Abdominal surgery.

Physiotherapy in Neurological Conditions

AB No 15: Kinesiological analysis of scapular rhythm in persons with chronic stroke with and without painful shoulder.
Authors: Nidhi Kala, Vimal Telang
Affiliation: AIIPMR

Purpose: To compare scapular position and muscle activity ratio in painful and non-painful paretic shoulder in chronic Stroke.
Relevance: Higher ratio of Upper- lower trapezius (UT/LT), upper trapezius-serratus anterior (UT/SA) along with scapular asymmetry is reported in impingement of musculoskeletal origin.
Participants: 30 participants (15 - Painful paretic shoulder, 15 without pain) with 1st-time Stroke duration > 6 months, age group 40 to 60 years, without presence of sensory and/or perceptual deficits who could do 90° active arm abduction on paretic side, MMSE > 24 were selected by convenience sampling.
Methods: Assessment was done for a) Voluntary control of arm by Fugl-Meyer assessment. b) ratio of amplitude of UT/LT, UT/SA in 90° abduction in sitting by Surface EMG c) Scapula asymmetry by Lateral Scapula Slide Test.
Analysis: Mann-Whitney U test for intergroup comparison and Wilcoxon Signed Rank Test for intragroup Comparison with Significance $p<0.05$ and 95% CI.
Results: Fugl-Meyer score of painful arm was significantly lower (p=0.0044, CI= -6.000 to -1.000). Scapular asymmetry was significantly greater in painful shoulders with arms at 90° abduction (p=0.002, CI= 0.5400 to 2.060). Muscle activity ratios of UT/LT (p=0.003, ci=0.5000 to -0.2600) and UT/SA (p=0.0001, CI= 0.5100 to -0.3500) was significantly higher in the painful shoulder due to decrease in the muscle activity of Lower Trapezius (p=0.0015, CI=-28.80 to -9.200) and Serratus Anterior (p=0.0015, CI= -30.96 to -3.370). While Muscle activity ratios of UT/LT (p=0.002, CI= 0.1900 to 0.5000,) and UT/SA ($p<0.0001$, CI= 0.3600 to 0.5400) was significantly higher in painful paretic shoulder than non-paretic side, there was no difference between two sides in nonpainful group ($p>0.05$).
Conclusion: Scapular asymmetry and increased muscle activity ratios of UT/LT and UT/SA are present in paretic painful shoulder.
Implications: Need for strengthening of scapula stabilizers viz. lower trapezius and serratus anterior as a part of painful shoulder management in Stroke.

Keywords: Stroke, Hemiplegic shoulder pain, Scapula.

AB No 9: Gait analysis in children with spastic diplegia with crouch in sagittal plan E – A retrospective observational study
Authors: Sneha Saravanakumar, Anitha Kumaravelan, Ravindran R
Affiliation: All India Institute of Physical Medicine and Rehabilitation

Purpose: To understand pathomechanics of crouch gait by analysing sagittal plane kinematics and kinetics of gait in children with spastic diplegia.
Relevance: This study would be instrumental in planning treatment strategy with respect to kinematics and kinetics in this population.
Participants: 26 children with CP spastic diplegia with crouch (GMFC level II) had undergone gait analysis during the period Jan 2015 to December 2016, of which 12 patients were excluded due to noncompliance of inclusion /exclusion criteria and missing technical data. Mean age of population was 12.29 +/- 1.94 yrs.
Methods: Study being retrospective, waiver of consent was sought from ethics committee. Sagittal plane kinematics and kinetics data was extracted from gait lab of bilateral hip, knee and ankle. Data was tabulated and mean and standard deviation were calculated for each percentage of gait cycle. Graphical representation of mean was done to describe phases of gait cycle. Normative gait cycle graph was used as a reference and deviations were analyzed.
Results: Ankle, knee and hip remained in excessive flexion throughout gait cycle. Excursion at all joints was reduced. Extension moment and abnormal power generation and absorbtion were seen at all joints throughout stance phase.
Implications: Definite need to improve hip, knee and ankle extensor function in stance phase to achieve better extensor stability and weight transmission along with excursion at all joints in swing phase.

Keywords: CP Diplegia, Crouch, Gait Analysis.

AB No 29: Effect of extracorporeal shock wave therapy in hamstring spasticity and gait in children with cerebral palsy spastic diplegia within age group 6 – 12 years: A placebo controlled trial
Authors: Yadnyi Budbadkar and Ravindran R

Purpose: To study the effect of Extracorporeal Shockwave Therapy (ESWT) on Hamstring Spasticity and Gait in children with cerebral palsy, spastic diplegia in age group 06-12 years.
Relevance: Few researchers have studied effect of ESWT on spasticity of hamstring which is one of the major muscle groups contributing in gait in children in with spastic diplegia

Methods: 34 children with spastic diplegia who fulfilled the inclusion/exclusion criteria were recruited and randomly allocated into two groups control (n=17), experimental (n-=17) by sealed envelope method. Experimental group received a single session of ESWT, Control group received placebo on hamstring muscle group. Both the groups underwent physiotherapy intervention 3times/week for 3 weeks. Modified Tardieu scale (MTS) and gait parameters (stride length, cadence and velocity) were assessed pre and post intervention.
Analysis: Friedman's test with posthoc analysis by Wilcoxon signed rank test used for intra-group comparison and Mann-Whitney U test for inter-group comparison.
Results: Intra-group analysis showed significant difference in MTS ($p< 0.0001$) and gait parameters ($p<0.05$) after 3 weeks. Also, a significant difference in spasticity (R1) was observed immediately after single session of ESWT in experimental group ($p =0.024$) while no such effect was observed in control group. Inter-groups analysis showed no significant difference on MTS and gait parameters at the end of 3 weeks.
Conclusion: There is an immediate short-term effect of ESWT on Hamstring spasticity. No added effect of single session of ESWT given along with physiotherapy intervention at the end of 3 weeks on Hamstring Spasticity and Gait.
Implications: Single session of Extracorporeal shockwave therapy as per the dosage of the study is safe to be use as adjunct to stretching and exercise therapy to reduce spasticity in hamstring in children with cerebral palsy spastic diplegia within age group of 6 – 12 yrs.

Keywords: Extracorporeal Shockwave therapy, Spastic Diplegia, Hamstring Muscle, Children, Spasticity, Gait.

AB No 53: Gait Deviation Index in children with Cerebral Palsy with severe gait impairment

Authors: Triveni Shetty, Ashok Johari and Sailaxmi Ganesan

Purpose: To explore Gait Deviation Index (GDI) of children with severe gait impairment characterized by crouch angle more than 200.
Relevance: Developing countries face contextual challenges like environmental factors, lifestyle challenges, limited health care facilities and poor compliance during rehabilitation of children with cerebral palsy which adversely affect motor-function and gait. Gait performance evaluated through Gait Deviation Index guides clinician in decision making. However, lack of information regarding Gait Deviation Index in children with high crouch angle necessitated the study.
Participants: Forty-seven ambulatory children with spastic cerebral-palsy with crouch angles of 7 0 – 370 were stratified according to functional status as Gross motor functional classification system (GMFCS) levels I, II and III.
Methods: Gait was evaluated using 12 camera 3D motion capture system (Vicon, Oxford, UK).
Analysis: Gait deviation index was compared among groups using Analysis of variance.
Results: At each level of GMFCS, higher crouch angle than values reported in literature were observed. At similar GMFCS levels, Gait Deviation Index of Indian children with cerebral palsy was 13%–27% lower than reported values. A strong-negative association was observed between crouch-angle and Gait Deviation Index across all three functional levels.
Conclusion: Higher crouch angle was associated with lower Gait Deviation Index. Gait Deviation Index was sensitive to detect minimal change in crouch angle, thus guiding clinicians for better monitoring of outcome non-surgical and post-surgical intervention.
Implications: Strong negative association of Gait Deviation Index with crouch angle suggests that monitoring of knee angle during gait can determine change in gait performance over a period of time.

Keywords: Gait, Gait deviation index, Cerebral palsy, Severe gait impairment.

AB No 58: Efficacy of craniosacral therapy on cognitive function in patients with chronic head injury

Authors: Swikruti Singh, Narkeesh Arumugam, Divya Midha
Affiliation: Department of Physiotherapy, Punjabi University, Patiala, Punjab

Purpose: The study has been conducted to examine the efficacy of craniosacral therapy in cognition in patients with chronic head injury.
Relevance: Head Injury is the leading condition of morbidity, disability, mortality and socioeconomic losses across the globe. It's a collective of symptoms such as altered consciousness, headache and vertigo, cognitive and perceptual deficits. Although cognition is the prerequisite for recovery in head injury, craniosacral therapy enables smooth CSF flow and suture correction by improving cognition. Present study has been conducted to find out the efficacy of craniosacral therapy to enhance the cognitive function in chronic head injury patient.
Methods: 16 subjects of chronic head injury having ability to walk independently with or without a walking aid and RLA score of 6 and 7 were included in the study. They were randomly allocated to both groups, Group A (Experimental) and Group B (Control). Participants in Group A received craniosacral therapy along with cognitive rehabilitation and conventional treatment for 2 sessions / week for 35 minutes and Group B received cognitive rehabilitation and conventional treatment every day for total 8 weeks. Outcome measures included were Mini Mental State Examination (MMSE) and Cognistat which were assess for before, and after the intervention.

Results: Statistical analysis revealed significant results for Cognistat with p value 0.006 and non- significant results for MMSE with p value 0.079 within the groups. But between group results showed significant results for MMSE with p value 0.008 and Cognistat with p value 0.000.
Conclusion: Although the statistically results were significant and clinically improvement were observed in the subjects. Future randomized control studies incorporating large sample would provide insight into the effectiveness and clinical relevance of craniosacral therapy on cognition in chronic head injury subjects.

Keywords: Cognition, Head Injury, Craniosacral Therapy.

AB No 22: Effect of motor Imagery on motor strategies of Sit-to-Stand (STS) task and functional mobility in individuals with chronic stroke
Authors: Devanshi Doshi, Ravindran R
Affiliation: All India Institute of Physical Medicine and Rehabilitation

Purpose: A biomechanically demanding task of Sit to stand is affected in stroke due to weight asymmetry, learned disuse of paretic limb, weakness of trunk and lower extremities causing shift of Center of Pressure towards non-paretic limb. Recently, Motor Imagery (MI) was found effective in improving weight symmetry during STS and functional mobility in stroke. Hence, the purpose of the study was to evaluate whether MI training has any effect on other parameters of motor strategies of STS.
Relevance: MI helps improve internal representation of the task which enhances quality of the task without fatiguing the patient.
Participants: 40 Subjects with Chronic stroke who consented and who fulfilled the inclusion and exclusion criteria were recruited and randomly assigned by sealed envelope method to Control (n=20) and Experimental Group (n=20).
Methods: Group A received conventional therapy for STS task while Group B received MI training as per the study protocol. Both the groups received respective intervention along with conventional physiotherapy program for 3 sessions per week for 4 weeks. Outcome measures [Weight Symmetry; Sway velocity; Rising Index; Weight transfer time (WTT) & Timed up and Go Test (TUG)] were assessed before and after 4 weeks in both groups.
Analysis: Data was assessed using parametric t-test since it passed the normality test.
Results: Within the group analysis shows there was significant improvement found in weight symmetry and functional mobility in both the groups while rise in rising index was found only in control group($p<0.05$). No improvement of sway velocity and WTT was found both the groups ($p>0.05$). Between groups analysis found no significant difference in all outcome measures between the groups.
Conclusion: There was no overt effect of MI over conventional treatment for STS task.
Implications: MI training can be administered to hemiplegic patients without fatiguing them to obtain similar effects as conventional intervention for STS.

Keywords: Motor Imagery, Sit to stand, Weight asymmetry, Stroke.

AB No 13: Effects of facilitation of oral reflexes on birth weight gain and vital parameters in preterm low birth weight neonates
Authors: Ankita Shripat, Jui Dave, Medha Deo
Affiliation: Terna Physiotherapy College

Purpose: Nutrition of a preterm low birth weight neonate is of vital importance in NICU where survival of infant is most important. Lack of development of oromotor control contributes significantly to the inability to breast feed orally. Recently, to facilitate overall development of the infants different therapeutic techniques are used in the NICU. The purpose of the study was to find out the effects of different facilitatory techniques on birth weight gain and vital parameter stability.
Relevance: There is a paucity of evidence regarding the benefits of peri-oral stimulation on birth weight gain and vital parameter stability in specifically preterm low birth weight infants.
Participants: 88 preterm low birth weight neonates fulfilling the inclusion criteria were selected through Incidental sampling technique using lucky draw method.
Methods: It was a randomized control trail. The experimental group was delivered a specialized intervention programme for 15 min, thrice a day for 7 days. A data of birth weight, heart rate respiratory rate, blood pressure and oxygen saturation was recorded pre and post intervention.
Analysis: The qualitative data was analyzed using SPSS version 19 at significance level of 0.005. The intra group data was analyzed using Friedman's & Wilcoxon's test. The inter group data was analyzed and co-related using Mann-Whitney U test.
Results: Significant difference in overall weight gain (p-0.001) and vital parameter stability in experimental group.
Conclusion: Facilitation of oral reflexes in preterm low birth weight neonates showed significant effect on birth weight gain and vital parameter stability.
Implications: The effect of facilitation of oral reflexes on behavior of preterm low birth neonates can be studied in future. These techniques can be used as part of routine early intervention. Mothers can be also trained to deliver the techniques.

Keywords: Preterm low birth weight, Facilitation of oral reflexes, Birth weight gain.

Physiotherapy in neurological conditions

AB No 36: Development and feasibility of adaptive sports for promoting physical activity in community-dwelling stroke survivors

Authors: Pradeepa Nayak, John Solomon M., Senthil Kumaran D.
Affiliation: Department of Physiotherapy, Manipal College of Health Professions, Manipal Academy of Higher Education, Manipal
Funding: This work was funded by Society of Indian Physiotherapists (SIPYR01_2018)

Purpose: To develop and test the feasibility of adaptive sports for promoting physical activity in community-dwelling stroke survivors
Relevance: Physical activity promotion program in community-dwelling stroke survivors will help to prevent recurrent stroke by improving their physical activity levels. Adaptive sports will be a novel and engaging intervention for maximizing participation and adherence to physical activities among stroke survivors. If found feasible, the adaptive sports can be implemented at home under caregiver supervision for improving physical activity
Participants: Chronic stroke survivors living in the community (n=15)
Methods: To develop the adaptive sports two focus group discussions (FGD) were conducted among the experts from the field of neurorehabilitation, exercise and sports science, sports physiotherapy and physical education and one stroke survivor. Environmental modifications for safety, feasibility and rules of the adaptive sports along with the individual adaptive sports, which can be played at home under caregiver supervision were finalized in the FGD.
Analysis: Paired t-test or Wilcoxson signed-rank test will be used to compare the pre and post physical activity levels and quality of life scores. Qualitative data will be analyzed using Atlas Ti8 software.
Results: Awaited
Conclusion: Awaited
Implications: Awaited

Keywords: Adaptive sports, Physical activity, Stroke survivors.

AB No 47: Comparison between Canalith positioning maneuver versus Liberatory maneuver in treatment of BPPV

Authors: Anwesh Pradhan
Affiliation: Nopany Institute of Healthcare Studies

Purpose: The purpose of the study was to compare the effectiveness between canalith repositioning maneuver (CRM) and liberatory maneuver (LM) for BPPV treatment
Relevance: BPPV is a pathology of inner ear which shows best results with CRM and LM. Studies show that both are effective procedure but which one is better is not studied much.
Participants: 50 participants of both gender of any age were included in the study with positive Hallpike-Dix test and divided in two intervention groups randomly.
Methods: Group A patients were treated with single maneuver of CRM and Group B with single maneuver of LM. Patients of both groups were instructed to maintain a modified lifestyle for 7 days and revaluated. Pre-post Hallpike-dix test and Dizziness handicap inventory data were collected.
Analysis: Within group pre- post data of Hallpike-dix test and Dizziness handicap inventory score was analysed with Wilcoxon signed rank test. Between the intervention groups comparison was done with Mann-whitney U test.
Results: Within group analysis shows significant improvement ($p<0.05$) in both the groups. Between group comparison shows insignificant differences ($p>0.05$). But clinically mean difference comparison shows CRM better than LM.
Conclusion: Both CRM and LM are very good procedure to treat BPPV. Though clinically the CRM is more effective. Studies shows both the techniques reposition the otoconia to otolith organ. CRM also seems to be more scientific.
Implications: BPPV has poor improvement with medication or surgery. Physiotherapeutic maneuvers like CRM and LM provides satisfactory improvement/correction from the symptoms. Long term follow up also shows few re-occurrence of symptoms.

Keywords: BPPV, Canalith repositioning maneuver, Liberatory maneuver, Hallpike-dix test, Dizziness handicap inventory.

AB No 11: The effect of a 4 week backward walking training program incorporated with rhythmic auditory cueing on spatial and temporal gait parameters and balance in participants with stroke

Authors: Jude Dsouza, Sandhya Wasnik
Affiliation: All India Institute Of Physical Medicine And Rehabilitation

Purpose: To investigate effects of Backward Walking Training (BWT) with rhythmic auditory cueing on spatial and temporal gait parameters and balance in stroke participants from onset to 2 years
Relevance: Evidence suggests, stroke rehabilitation programs which are repetitive and rhythmically patterned are effective in facilitating long term improvements in the

sensori-motor cortex related to motor learning. A novel approach, introduced towards Gait and Balance recovery post stroke is BWT and Rhythmic Auditory Cueing. Backward walking improves kinematic disturbances of gait whereas Rhythmic Auditory Cueing, synchronizes muscle activation required for coordinated gait.

Participants: 40 Participants, Males/Females aged 18-60 years diagnosed with hemiparesis, with MMSE >/=24, Brunnstorm lower extremity grade 3, 4,5., Able to maintain an upright standing posture and complete 5 strides with cane/tripod, with and without Posterior shoe insert and participants with DGI score of >10 and BBS score of >21. Participants without hemiparesis, those undergone surgery in the past one year and those with anomalies, were excluded.

Methods: Convenience Sampling and Using chit method, 40 participants were randomly allocated to 2 groups, Group A**:** Experimental group (n=20) and Group B**:** Control Group (n=20).

Group A: Conventional physiotherapeutic exercises + BWT using a Metronome (60 min, 4 weeks)
Group B: Conventional physiotherapeutic exercises + BWT (60min, 4weeks).

Analysis: Results considered significant at ($p< 0.05$) and CI at 95%.

Normality test was passed, Paired t test and Unpaired t test used for Intra group and Intergroup analysis

Results: Experimental group improved significantly in Cadence 10.50 steps/min (95%CI -15.19 to -5.81), Walking velocity 5.20 m/min (95%CI -7.52 to -2.88), DGI 3.00 (95%CI -4.20 to -1.79) and BBS 2.30 (95% CI -3.81 to -0.78) more than Control group.

Conclusion: BWT with Rhythmic Auditory Cueing + Conventional physiotherapy exercises is more effective in improving Gait and Balancein stroke participants. Future trials can be directed to investigate effects of BWT with Rhythmic Auditory Cueing using a Treadmill to find efficacy on Gait and Balance in stroke participants.

Implications: BWT with Rhythmic Auditory Cueing should be implemented for rehabilitation of Stroke participants.

Keywords: Backward walking training, Rhythmic auditory cueing, Stroke, Spatial and temporal gait parameters, Balance.

AB No 69: Efficacy of transcranial direct current stimulation (tDCS) in comparison with video game on executive function in Children with attention deficit hyperactivity disorder (ADHD): A pilot study

Authors: Mridul Makkar, Narkeesh Arumugam, Divya Midha
Affiliation: Punjabi University, Patiala

Purpose: To find the efficacy of tDCS when compared to video game on executive function in children with ADHD. To determine the efficacy of Transcranial Direct Current Stimulation (tDCS) as compared with video game alone on executive function to improve Non Verbal Reasoning, Attention, Cognitive Flexibility and Interference in children with Attention Deficit Hyperactivity Disorder (ADHD).

Relevance: Attention Deficit Hyperactivity Disorder (ADHD) is a common neurodevelopmental disorder characterized by inattention, hyperactivity and impulsivity, all of which present as a deficit in executive function. A multimodal treatment approach for ADHD is recommended internationally including Cognitive behavioral therapy, task oriented training and psycho-education. tDCS is an emerging treatment for ADHD which can modulate neuronal activity and thus help to improve executive function.

Methods: Randomized Controlled Trial (RCT)**:** Pilot Study Participants with age group 10-16 years were screened for ADHD using NICHQ Vanderbilt Questionnaire. 18 participants were randomly allocated into experimental (video game+ tDCS) and control group (video game). tDCS was applied at F3 and Fp2 (according to International 10-20 EEG classification system) at an intensity of 1mA for 20 minutes. Each participant completed 3 sessions per week for 4 weeks and was assessed on Raven's Progressive Matrices (RPM), Trail Making Test (TMT) and Stroop Test on Day 0, 15 and 30 of the intervention period.

Results: Statistically, the results were found to be non-significant ($p>0.05$) for all outcome measures. However, there was an improvement seen in the clinical symptoms of participants as well as increase in mean scores of RPM and a decrease in mean score of TMT and Stroop Test.

Conclusion: It can be inferred that tDCS seems to be a promising treatment option to improve executive function, but studies with larger sample size are required for generalizability of the findings based on stats.

Keywords: Attention deficit hyperactivity disorder, tDCS, executive function, Video game.

AB No 92: Immediate effect of submaximal exercises on visual reaction time in the elderly population

Authors: Jui Dave, Medha Deo
Affiliation: Terna Physiotherapy College

Purpose: Reaction time training is an important aspect of balance training in the elderly. The importance of visual and auditory reaction time is self-evident. Facilitatory effects of exercises on CNS are well documented. However, the facilitatory effects of exercises on reaction times need verification. Review of literature shows that out of many beneficial effects of exercises, effect on reaction time is not very widely studied. Studies are available on the effect of maximal and acute exercises on the reaction time, however giving maximal and acute exs to the elderly pose an ethical and medical risk. Hence this study attempts to study the effects of sub maximal exs on the Visual reaction time in the elderly.

Relevance: This study is done to verify the facilitatory effects of sub maximal exercises translating into improvement in the reaction time thereby improving the overall balance and independence in the elderly

Participants: Community dwelling functionally independent young elderly individuals are selected for this study with the age group of 65 -74.
Elderly with corrected vision are included for the study. Elderly with dysfunctional cognition and comprehension are excluded from the study. Elderly with any known medical illness that contraindicates their exs participation are excluded. 100 elderly were randomly selected for the study from the urban housing societies.
Methods: This was a pre post study design with random selection of the elderly. After the ethical and the patients consent they were screened for their fitness to undergo exercises. They were subjected to submaximal exercises in the form of a 6 minute walk test. the visual reaction time was tested using The VRT was tested using Inquisit 4.0 computer software by Millisecond Software, Washington.
Analysis: Analysis was done using the paired t test.
Results: The pre post difference in the reaction time was statistically and clinically significant. The Visual reaction time was reduced post sub maximal exercises.
Conclusion: Submaximal exercises do have a facilitatory effect on the visual reaction time in the elderly.
Implications: Important for the balance training and fall prevention clinics for the elderly.

Keywords: Elderly, Sub maximal exercises, Visual reaction time.

AB No 70: Concurrent effect of transcranial direct current stimulation (tDCS) and therapist assisted sensorymotor task training (TASTT) on Motor retentions of paretic hand in patients with subacute Stroke-A randomized controlled trial.
Authors: Divya Midha and Narkeesh Arumugam
Affiliation: Punjabi University, Patiala

Purpose: Concurrent effect of (tDCS) along with (TASTT) on Motor retentions of Paretic Hand in Subacute Stroke survivors.
Relevance: Reacquisition of hand motor function following stroke depends on inter hemispheric motor circuits in the brain. The challenge for obtaining good recovery in affected hand is to optimally utilize the broad spectrum intrinsic capacity of the brain in modulating viable neuronal networks by providing central & peripheral stimulation strategies to recover from the loss due to stroke.
Methods: A Prospective, Randomized-Sham controlled trial was conducted on 40 Subacute survivors, selected based on the sample selection criteria and were randomly allocated into two groups i.e Experimental group (Bihemispheric - tDCS over Primary Motor cortex (M1) at C3/C4, based on (10-20 EEG International Classification System) along with TASTT) and Control group (TASTT +Sham tDCS) with 1.2ma, 20minutes/session, 5days/week for 4 weeks. **Outcome Measures:** Quantitative Electroencephalogram (QEEG), Fugl meyer Assessment for Upper Extremity (FMA), Hand Dexterity (9Peg Hole Test), Pinch Strength (Lateral, Chuck and Pulp Pinch), Grip Strength & (tDCS) adverse effect questionnaire.
Results: Between group statistical analysis revealed significant findings in the Grip strength in the experimental Group ($p<0.05$) and Non significant Findings for other Outcome measures. Within group Statistical analysis revealed significant findings for FMA-UE ($P<0.05$) in the experimental and non significant findings with other Outcome measures with ($p>0.05$) in both groups. QEEG analysis revealed non significant findings with the alpha and Theta wave frequency and mean values changes, post intervention in both the groups.
Conclusion: Besides Non significant Findings, clinical improvement was seen in participants with the changes in the mean scores. There is strong need of large sample trials for establishing the synergic effect Central and peripheral stimulation strategies on paretic hand functions in stroke.

Keywords: Transcranial direct current Stimulation, Stroke, Hand Dextrity.

AB No 10: Added effect of aquatic therapy on functional performance and gait in incomplete cervical spinal cord injury level: A case study.
Authors: Dipti Patil, Prajakta Dingle
Affiliation: Aarrosh Physiotherapy, Rehabilitation and Research Centre

Purpose: Spinal cord injury (SCI) is a traumatic event that is debilitating and results in permanent motor and sensory deficits. This case report describes an aquatic therapy program and the outcome for 19-year-old male with incomplete spinal cord injury. The treatment and rehabilitation process for trauma caused by SCI is long, expensive and exhausting. There are many rehabilitation services evolving which are practiced to improve the functional performances of a spinal cord injury patient. In adjunct with physical exercises, aquatic therapy can be used to analyse added effect. There is weak evidence supporting aquatic exercise training in spinal cord injury. Hence the need arises to carry out the study to see the effect of aquatic therapy on SCI, and it becomes necessary to evaluate the functional outcomes.
Relevance: Aquatic therapy, has long been perceived as an effective, yet less utilised, therapy. Hence it becomes important to analyse the effect of the same.
Participants: 19-year-old patient, classified as ASIA- C prior to therapy, neurological level of injury was determined as C-6 according to the American Spinal Injury Association Impairment Scale.
Methods: Pt was undergoing intensive physiotherapy at the home environment. In addition to land based exercises, aquatic therapy was included in which exercises were designed to improve gross motor skills, functional mobility and gait parameters. Pre ad post Spinal cord independence

measure score and walking index for spinal cord injury (WISCI II) was performed.
Analysis: no statistical analysis was performed.
Results: Spinal cord independence measure score improved from 32 to 43. Patient showed drastic improvement in Walking Index, where he was able to walk 10 meters in walking frame with no orthosis and no assistance
Conclusion: In conclusion, we conclude that introducing aquatic therapy as a treatment strategy helps to improve functional performance in incomplete spinal cord injury patients. However, further research is needed with a larger sample size to generalize the effect
Implications: Aquatic therapy as a treatment strategy should be included in adjunct with land based exercises.

Keywords: Aquatic Therapy, Rehabilitation, Spinal Cord Injury.