

## Abstract

# Neuroprosthetic Advancements in Transforming thought to Action with Brain Computer Interface (BCI) System in Patients with Chronic Stroke and Spinal Cord Injury (SCI).

Harshini S J<sup>1</sup>, Rajeswari M<sup>2</sup>

Associate Professor, Faculty of Physiotherapy, Sri Ramachandra Institute of Higher Education and Research, Porur, Chennai, Tamil Nadu.



Corresponding author - Mrs. Rajeswari M (rajeswarimuthusamy2021@gmail.com)

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## Introduction

In Stroke, Constraint-Induced Movement Therapy (CIMT), Neuromuscular Electrical Stimulation (NMES) or Motor Imagery are some of the most common therapies for motor rehabilitation of the hemiplegic arm. But Major limitation in these techniques is, they are not appropriate for patients in chronic stage with moderate or severe impairment. In SCI, Prolonged use of wheelchairs leads to decreased physical activity. Certain approaches have been gaining attention, such as robotic devices or Virtual Reality systems utilize Neuro-scientific principles and they typically do not utilize direct measures of brain "This Lacunae has been addressed by a Technological advancement in Neuroprosthetics called Brain computer interface systems (BCI). It restores motor and/or sensory capacities & use neural activity recorded from the brain to decode the motor intent of an individual in real time and artificially produce the desired limb movement using Functional Electrical Stimulation (FES) system.

## Methods

With reference from most of the studies, Patients were seated before the avatar screen & wore Electro Encephalo gram (EEG) caps and FES pads were placed on the skin over desired muscle groups, followed by which Motor Imagery (MI) tasks were given focusing on a particular limb (tactile, visual and auditory cues) During the feedback phase, FES and avatar was triggered when the system detected MI of the correct hand. If no MI is detected, feedback is deactivated.

## Results

Most of the studies reported, significant reduction in spasticity, improved grasping abilities and Virtual reality (VR) along With BCI has shown promising results in stroke population. And in SCI, this system may pave the way for the restoration of over ground walking after SCI.

## Conclusion

MI practice Along with BCI was found to be feasible, as it creates a closed-loop multi- modal feedback aimed at bolstering Hebbian plasticity and restore lost motor functions.

## Keywords

Brain Computer Interface, Motor Imagery, Functional Electrical Stimulation.

## Abstract

# The Influence of Covid-19 Lock Down on Physical Activity & Quality of Life in Patient with Chronic Kidney Disease Undergoing Haemodialysis.

Ajith Kumar P<sup>1</sup>, Sridevi S<sup>2</sup>, Senthilkumar T<sup>2</sup>

<sup>1</sup>Pursuing his final year of post graduate in Master of Physiotherapy Cardiopulmonary Sciences, Faculty of Physiotherapy, Sri Ramachandra Institute of Higher Education and Research, Porur, Chennai, Tamil Nadu.

<sup>2</sup>Associate Professor, Faculty of Physiotherapy, Sri Ramachandra Institute of Higher Education and Research, Porur, Chennai, Tamil Nadu.



Corresponding Author - Mrs. S. Sridevi (devibsmoorthy@sriramachandra.edu.in)

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## Introduction

Chronic kidney disease (CKD) patients have reduced levels of physical activity, which influence the disease progression in these populations. Corona virus disease 2019 (COVID-19) is an infectious disease due to its rapid spread across the globe the worldwide lockdown and mandatory social distancing was announced. As with the lockdown people faced difficulties in access to the centre for haemodialysis, also restricted themselves within home environment, which might reduce their physical activity would have impact on their quality of life. Maintenance of adequate level of physical activity is mandatory to prevent all-cause mortality, cardiovascular problems, quality of life and morbidity.

## Methods

This is an observational study, on End Stage Renal Disease (ESRD) population which was performed at F2 Nephrology Department, SRIHER-Medical Centre, Chennai, to figure out the health-related quality of life, physical activity, nutritional impairments, and fatigue level and to compare it with the people who have missed out their haemodialysis sessions during pandemic lock down. The questionnaires used were (KDQOL SF-36) Kidney Disease Quality Of Life SF-36, Human Activity Profile (HAP), Fatigue Severity Scale (FSS), And Subjective Global Assessment Scale (SGA). The number of haemodialysis missed during these pandemic Lockdown was noted using data from the department and reason has been recorded.

## Results

Totally 30 patients were given with the questionnaires and out of which only 3 patients missed-out the haemodialysis sessions due to pandemic lockdown. The lockdown impose effect did not affected the continuity of haemodialysis session but affected the physical activity and quality of life in all circumstances.

## Conclusion

The physical activity and quality of life variations are common among the ESRD (end stage renal disease) population, it is important to figure out the root cause for the altered physical activity and impaired quality of life to prevent their disease progression.

## Keywords

End Stage Renal Disease, Quality of Life, Physical Activity, Fatigue, Nutrition.

## Abstract

# Biomechanical and Evidence Based Analysis of Orthopaedic Special Tests

Niveda MV<sup>1</sup>, Antony Leo Aseer P<sup>2</sup>

<sup>1</sup>Ms. Niveda .M.V is pursuing her final year under graduation in Bachelors of Physiotherapy program at Sri Ramachandra Faculty of Physiotherapy, Sri Ramachandra Institute of Higher Education and Research, Porur, Chennai.

<sup>2</sup>Vice-Principal, Sri Ramachandra Faculty of Physiotherapy, Sri Ramachandra Institute of Higher Education and Research, Porur, Chennai.



Corresponding Author - Dr. P. Antony Leo Aseer ([viceprincipal.physiotherapy@sriramachandra.edu.in](mailto:viceprincipal.physiotherapy@sriramachandra.edu.in))

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## Introduction

The health sciences are undergoing a paradigm shift toward evidence-based practice, the assimilation of research evidences, clinical expertise and patient's values. It is essential to consider the tests diagnostic utility before implementing the tests and measures into clinical practice. The lower-extremity biomechanics is complex and normal function is dependent on intact osteochondral, musculotendinous and ligamentous structures. Beyond evidences, it is also significant to analyse the mechanical considerations of the manoeuvre involved in the special test. Hence it is intended to analyse the biomechanics of the special test manoeuvre along with its psychometric properties being available in the literature.

## Aim

The broad aim is to analyze the biomechanics of the special test manoeuvre along with its psychometric properties of lower extremity orthopaedic special tests.

## Methodology

Two clinical examples of knee complex were considered for the analysis, namely the patellofemoral dysfunction syndrome and meniscal injury. The parameters for biomechanical analysis were sorted based on the therapist knowledge base and from literature evidences. Evidence based analysis of special tests were collected through literature search using Pubmed and Google scholar search engines. Four articles were retrieved and three were utilized for evidence based values (sensitivity, specificity and likelihood ratios) of the special tests. The articles ranged from 2008 to 2020.

## Results

The mechanical analysis and evidence based values of eccentric step test was satisfactory in diagnosing patellofemoral dysfunction syndrome. Similarly, Thessaly & Ege's test was satisfactory in diagnosing meniscal injury.

## Conclusion

It is evident that those special tests with appropriate mechanical base (biomechanical principles) exhibited better evidences (psychometric values), which can be incorporated to clinical practice. Beyond evidences, it is significant to analyze the biomechanics of the special test for effective clinical practice.

## Keywords

Special test, orthopedics, sensitivity, specificity, biomechanics.

## Abstract

# Covid-19 and Physical Inactivity in School Children – A Double Burden - A Review of Literature

Pavithra K<sup>1</sup>, Sridevi S<sup>2</sup>, Senthil Kumar T<sup>3</sup>

<sup>1</sup>Ms. PAVITHRA .K is pursuing her final year of undergraduate in Physiotherapy program in Sri Ramachandra Faculty of Physiotherapy, Sri Ramachandra Institute of Higher Education and Research, Chennai.

<sup>2</sup>Associate Professor, Sri Ramachandra Faculty of Physiotherapy, Sri Ramachandra Institute of Higher Education and Research, Chennai.



Corresponding Author - Mrs. S. Sridevi (devibsmoorthy@sriramachandra.edu.in)

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## Introduction

Novel Corona virus (COVID-19) spread became pandemic throughout the world. To control the rapid infection of COVID-19 lockdown was the best option and let rapid change in lifestyle of all age groups particularly the school going children .To what extent, the physical activity has been reduced during this lockdown period is not known. Hence, we aimed to evaluate the impact of the COVID-19 lockdown on physical activity level and to identify the recommendation for physical activity for this cohort through a literature review.

## Material and Methods

Studies were identified from searches in PubMed, Cochrane Central, and Google scholar from 2020 through 2021. We screened the titles and abstracts for eligibility, rated the methodological quality of the studies, and extracted data. Studies had to report about physical activity or physical fitness measurement and recommendation for physical activity in school children. Studies had to report at least one physical activity measure.

## Results

We could extract 15 full articles and analysis of the same has been done. Based on the analysis it was found that there is a significant reduction in physical activity among school children during the COVID-19 lockdown period has been reported globally and recommendations for physical activity has also been noted.

## Conclusion

Parents and careers should incorporate physical activity into children's daily routine. Extended periods of sitting should be broken up every 30–60 min (eg, by standing and stretching for 1 min). Educators and teachers should know and promote the movement behaviour guidelines, and embrace opportunities to incorporate healthy movement messages, practices, and policies into daily home-school routines and lessons—eg, when scheduling online lessons, limit prolonged sitting and encourage changes in posture such as regularly standing, stretching, or moving on the spot. Parents to stay active with children at home by engaging in moderate intensity activities such as active exercise games, sports, and walking, while maintaining the recommended social distancing from neighbors and each other.

## Keywords

COVID 19, lockdown, physical activity, school children, recommendation.

## Abstract

# A Survey on Awareness of Physiotherapy Intervention for Non Alcoholic Fatty Liver Disease Among Indian Physiotherapists

Sedhunivas R<sup>1</sup>, Sridevi S<sup>2</sup>, Venkatesh N<sup>3</sup>

<sup>1</sup>R. SEDHUNIVAS is pursuing his final year of post graduate in Master of Physiotherapy Cardiopulmonary sciences in Faculty of Physiotherapy, Sri Ramachandra Institute of higher education and Research, Porur, Chennai, Tamilnadu.

<sup>2</sup>Associate Professor, Faculty of Physiotherapy, Sri Ramachandra Institute of Higher Education and Research, Porur, Chennai.

<sup>3</sup>Chairman, Faculty Of Physiotherapy, Sri Ramachandra Institute Of Higher Education And Research, Porur, Chennai, Tamilnadu.



Corresponding Author - Mrs. S. Sridevi ([devibsmoorthy@sriramachandra.edu.in](mailto:devibsmoorthy@sriramachandra.edu.in))

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## Introduction

Non-alcoholic fatty liver disease (NAFLD) is one of the most common hepatic disorders, with macrovesicular fat accumulation in more than 5% of hepatocytes in the absence of any secondary cause of hepatic steatosis, such as significant alcohol abuse (more than 10 g/day for women and 20 g/day for men), hepatotropic viral infection, drugs which can cause fatty liver, or any other etiologies. NAFLD is a common complication of obesity, associated with serum hyper triglyceridemia and impairments of liver lipoprotein metabolism. In the last couple of decades, NAFLD has emerged as the most common liver disease in adults. Despite the benign natural course in the majority, 10% of the NAFLD patients may progress to cirrhosis later on in their lives. The prevalence of NAFLD ranges from about 20-35% in the Western population and about 19-32% in Indian population, with the prevalence being higher (70-90%) in obese and diabetic individuals. Lack of Indian studies denotes there are huge lacunae on awareness among Indian physiotherapists. In this study we intended to know about the awareness of Physiotherapy intervention and exercise protocols adapted by Indian physiotherapists.

## Methods

The study was executed by sending the online link (<https://forms.gle/cRswuc1REDAVWRXu8>) to Practicing physiotherapists across India through social networking sites such as Facebook, WhatsApp. The Survey was administered using the online survey portal, Google forms during the period of (From 5.4.2021 to 10.4.2021) and the responses were recorded and analyzed to gather the end result.

## Results

Out of 77 participants, 6 of them didn't give consent to participate in the study and 28 were Bachelor of Physiotherapy holders and 41 are Master of Physiotherapy holders and 2 of them are Research scholars. In experience two participants were fresher's and stated that they didn't have much experience and 5 of them had less than 2 years of experience and 2 of them had more than five years of experience. Only 9 physiotherapists were aware of Physiotherapy Intervention for NAFLD patients and have submitted the Exercise Protocol adapted by them. Remaining physiotherapists were unaware of role of physiotherapy for NAFLD and so couldn't able to continue further and to participate in the study.

## Conclusion

Thus the study concludes that there is lack of awareness of physiotherapy intervention among Indian physiotherapists for NAFLD and this warrants research in this cohort.

## Keywords

Non Alcoholic Fatty Liver Disease, Physiotherapists, Exercises, Awareness.

## Abstract

# Physical Activity and Mental Health Challenges of Women During COVID - 19 Lockdown

Shanmugapriya R<sup>1</sup>, Sathyaprabha B<sup>2</sup>

<sup>1</sup>Ms. R. SHANMUGAPRIYA is pursuing her final year of post graduate in Master of Physiotherapy Women's Health in Faculty of physiotherapy, Sri Ramachandra Institute of Higher Education and Research, Porur, Chennai, TamilNadu.

<sup>2</sup>Associate Professor, Sri Ramachandra Faculty of Physiotherapy, Sri Ramachandra Institute of Higher Education and Research, Chennai, Tamil Nadu.



Corresponding Author - Mrs. B. Sathyaprabha (bsathyaphysio@gmail.com)

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## Introduction

Corona virus disease (COVID-19) is an infectious disease caused by a newly discovered corona virus (WHO). The Covid-19 outbreak is the most severe pandemic since the H1N1 influenza (Spanish flu) pandemic that occurred in 1918. WHO defines physical activity as any bodily movement produced by skeletal muscles that requires energy expenditure. Both moderate- and vigorous-intensity physical activity improve health. Mental health is defined as a state of well-being in which every individual realizes his or her own potential, can cope with the normal stresses of life, can work productively and fruitfully and is able to contribute to her or his community. Covid-19 pandemic has affected women more profoundly than men in several areas, both at workplace (especially in the health and social sector), and at home with an increased workload due to lockdown and quarantine measures.

## Methods

A literature search was conducted on PubMed, CINAHL, Pedro, Cochrane library, EMBASE, Google scholar, along with references searching for articles published in English. The terms included in search were covid-19, physical activity, mental health. Articles were searched from 2019 to 2021.

## Results

Articles identifying the physical activity level and mental health during pandemic situations were included. The WHO recommends practicing at least 150 minutes of moderate to vigorous physical activity per week, 75min of high intensity per week or combination of both. Women experienced significantly more generalized anxiety than men due to COVID-19.

## Conclusion

The COVID-19 pandemic has a negative impact on physical activity. Those who reduced their level of physical activity had the highest levels of mood disorders. Women who reported lower levels of physical activity due to COVID-19 reported significantly lower Mental Health Continuum scores, lower social, emotional and psychological well-being, and significantly higher generalized anxiety.

## Keywords

Covid-19, Physical activity, Mental health, Exercise and Wellbeing.

## Abstract

# Mechanical Analysis of Asanas in Iyengar Yoga Style for Neck Pain

BC Shruti Sri<sup>1</sup>, P Antony Leo Aseer<sup>2\*</sup>

<sup>1</sup>Ms. B. C. Shruti Sri is pursuing her final year of Undergraduate in Bachelors of Physiotherapy Program at Sri Ramachandra Faculty of Physiotherapy, Sri Ramachandra Institute of Higher Education and Research, Chennai.

<sup>2</sup>Vice-Principal and Professor, Sri Ramachandra Faculty of Physiotherapy, Sri Ramachandra Institute of Higher Education and Research, Chennai, Tamil Nadu.



B. C. is a Central Government certified yoga instructor and has completed 1000 hours of yoga teacher training. She was awarded with titles- “Yoga Charini” and “Yoga Kalaimamani”.

Corresponding Author - Dr. P. Antony Leo Aseer ([viceprincipal.physiotherapy@sriramachandra.edu.in](mailto:viceprincipal.physiotherapy@sriramachandra.edu.in))

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## Introduction

In the Global Burden of Disease study, out of the 291 conditions studied, neck pain was found to rank 21st in terms of overall burden and fourth in terms of overall disability. The Iyengar yoga style is characterized by the use of “props” (e.g., mats, blankets, blocks) that increase stabilization and allow for a slow and safe practice of the postures. This style is also characterized by the emphasis on protecting the joints, promoting blood circulation, and compensating for limitations in strength, flexibility, and mobility. Iyengar yoga interventions must be applied with regular time, which is carried out 90 minutes every week. Iyengar yoga can relieve neck pain intensity, improve pain-related functional disability, increase cervical range of motion, improve quality of life and boost mood. Even though the techniques are proven effective, it is highly warranted for a mechanical analysis of asana/postures. The analysis will further facilitate the integration of yoga therapy in physical therapy practice. The broad aim of this presentation is to do a mechanical analysis of clusters of asanas in Iyengar yoga style for neck pain.

## Methods

The 12 asanas in Iyengar yoga style for neck pain are Tadasana, Ardha Uttanasana, Chair Bharadvajasana, Adho Mukho Virasana, Adho Mukha Svanasana, Utthita Trikonasana, Virabhadrasana II, Utthita Parsvakonasana, Prasarita Padottanasana, Bhujangasana by ropes, Chakrasana, Ujjayi Pranayama. The mechanical analysis includes postural strategies, muscle activation patterns, core muscle activation and kinematic interactions of joints.

## Conclusion

The mechanical analysis will further provide insights on the application of therapeutic principles of flexibility, mobility and conditioning in Iyengar yoga style for neck pain. The presentation may further create awareness among physiotherapists for inclusion of yoga as an integrated intervention in physiotherapy practice in specific to neck pain.

## Keywords

Neck pain, Yoga, Biomechanics, Iyengar style, Asana.



## Abstract

# Orthotic Management of Wrist and Hand in Rheumatic Populations: A Narrative Review

Sweatha Nathan R<sup>1</sup>, Angeline R<sup>2</sup>

<sup>1</sup>R. Sweatha Nathan is pursuing her final year BPT program in Sri Ramachandra Faculty of physiotherapy, Sri Ramachandra Institute of Higher Education and Research, Porur, Chennai-116.

<sup>2</sup>Assistant Professor, Sri Ramachandra Faculty of physiotherapy, Sri Ramachandra Institute of Higher Education and Research, Porur, Chennai-116.



Corresponding Author - Angeline R (angelinejobin75@sriramachandra.edu.in)

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## Introduction

Splints are prescribed for patients with rheumatoid arthritis (RA). The main aim of administering splints or orthosis is to decrease pain, reduce swelling, maintain and improve mobility and to prevent deformity. These orthoses include resting hand splints, wrist supports and finger splints. The objective of this review is to assess the effectiveness of wrist and hand splints in relieving pain, improving grip and pinch strength and in preventing deformity.

## Methods

The study was registered in Open Science Framework (OSF). A search of relevant literature included database searches like Cochrane Library, PubMed, MEDLINE, EMBASE, the PEDRO data base, and the search period was from January 2005 to January 2021. Selection criteria included all randomized control trials (RCTs) comparing the use of wrist and hand orthoses against placebo, active intervention, or regular treatment was selected. Two reviewers selected the studies and extracted data. The methodological quality of the RCTs was assessed using a validated scale (PEDro scale).

## Results

Out of 46 RCTs screened, six studies met the inclusion criteria. These studies dealt with the following: working wrist splints, resting hand and wrist splints, night time splints. There is low to moderate level evidence to make firm conclusions about the effectiveness of working wrist splints, night splints and finger splints in decreasing pain, improving patient satisfaction, increasing grip & pinch strength and increasing function for people with RA. Potential adverse effects were not recorded in any of the

studies. Patients' preference for splints was quite high and significant, patients preferring or not preferring specific type of finger splints included: effect, ease of use, appearance, comfort and side effects.

## Conclusion

There is evidence that satisfaction with the splint was reported by most participants wearing wrist splints during work. The study states that the use of wrist and hand splints was effective in reducing pain, increasing strength and hand function. Prefabricated splints and commercial orthotic splints are highly effective in reducing pain in RA patients with wrist arthritis.

## Keywords

Rheumatoid arthritis, Splints, Pain, Mobility, Physical function.



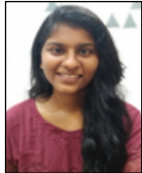
## Abstract

# Cues to Action: Different Cues for Pelvic Floor Muscle Contraction by Women's Health Physiotherapist: A Literature Review

Vandana<sup>1</sup>, Ponmathi P<sup>2</sup>

<sup>1</sup>UG Final Year, Faculty of physiotherapy, Sri Ramachandra Institute of Higher Education and Research, Porur Chennai, Tamil nadu.

<sup>2</sup>Associate Professor, Faculty of physiotherapy, Sri Ramachandra Institute of Higher Education and Research, Porur Chennai, Tamil nadu.



Corresponding Author - Mrs. P. Ponmathi ([ponmathi.p@sriramachandra.edu.in](mailto:ponmathi.p@sriramachandra.edu.in))

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## Introduction

Pelvic floor muscles help stabilise the pelvis and support the pelvic organs. Pelvic floor muscles being invisible and hard to feel while exercising or moving in daily life make the patient difficult to understand. Pelvic floor muscles gets stretched and weak during pregnancy and delivery predisposing conditions like stress urinary incontinence, Pelvic organ prolapse, musculoskeletal low back pain in women's life. Strengthening of pelvic floor muscles is the way to rehabilitate the pelvic floor muscles and improve the women quality of life. In addition to anatomically concealed and socially tabooed, pelvic floor is often-times metaphorically spoken of-even in therapeutic settings. The teaching of pelvic floor muscle exercises (PFME) is aimed at helping the woman to regain control over the peri-vaginal musculature. Kegel first described these exercises in 1948 after finding that most women with stress urinary incontinence had pelvic floor muscle insufficiency. Kegel argued that restoring the function of the pelvic floor would in turn increase the urethral closure pressure, thus preventing involuntary loss of urine. The main objective of this review is to identify the different cues used to teach pelvic floor contraction.

## Methods

A literature search was conducted on PubMed, CINAHL, Pedro, Cochrane library, EMBASE, Google scholar along with references searching for articles published in English, were searched for qualitative and quantitative articles addressing different cues for pelvic floor muscle contraction. Quality assessment was performed by two independent reviewers using the Mixed Methods Appraisal Tool.

## Results

Draw in and close around the vagina is the common cue, squeeze and lift are the common use cues followed by the next common is pucker anus, urethra and vagina.

## Conclusion

Different cues prevails across the world to strengthen pelvic floor muscles, Researches should be increased to investigate the optimal cue that produce maximal pelvic floor contraction for the benefit of the patients.

## Keywords

Pelvic floor muscles, Instructions, Training.

## Abstract

# Oxidative Stress in Pulmonary Conditions and Its Significance in COVID-19 Management: A Literature Review

Yogavarshini SK<sup>1</sup>, Senthil Kumar T<sup>2</sup>, Sridevi S<sup>3</sup>

<sup>1</sup>Ms. Yogavarshini .S .K is pursuing her final year in Physiotherapy Undergraduate program at Sri Ramachandra Faculty of Physiotherapy, Sri Ramachandra Institute of Higher Education and Research (Deemed to be University), Chennai, Tamil Nadu.

<sup>2</sup>Associate Professor, Faculty of physiotherapy, Sri Ramachandra Institute of Higher Education and Research, Porur Chennai, Tamil nadu.



Corresponding Author - Dr. T. Senthil Kumar (physiotsk@gmail.com)

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## Introduction

Oxidative stress is a phenomenon caused by an imbalance between production and accumulation of oxygen reaction species in the body indicative of the inability of a biological system to detoxify it. It one of the major predisposing factor in the pathogenesis of pulmonary conditions including COVID-19. The aim of this presentation is to review the significance of oxidative stress in pulmonary conditions including COVID - 19 along with the functional interventions.

## Methods

The Boolean search was done in standard search platforms including PubMed, Wiley Online Library, Science direct, PEDRO, Google Scholar with key terms including oxidative stress, quadriceps weakness, functional capacity, COPD, COVID – 19, steroid induced myopathy and diaphragm retraining . Only Full text articles in English published since 2000, meeting the relevance and specific objectives of this study were only included for analysis.

## Results

15 studies were analysed after screening 34 articles. In total 4840 patients with pulmonary diseases, oxidative stress related issues have been reported. The usage of corticosteroids in COVID - 19 may increase of oxidative stress. In patients with severe COVID infection, oxidative stress and reduced functional capacity have been reported. Functional restrictions were found to be associated with quadriceps weakness were evident. Limited research data showed that Physiotherapy interventions such as functional training and diaphragm retraining are proved to be effective to prevent the long-term effects of COVID - 19.

## Conclusion

The potential effects of oxidative stress in pulmonary condition were established, along with its association with quadriceps weakness and reduction in the functional capacity. Fewer studies have indicated potential benefits in immunoregulation of exercise in COVID 19. Randomized trials on benefits of functional training yet to be established in COVID 19 like conditions.

## Keywords

Oxidative stress, COVID 19, Quadriceps weakness, functional training, Diaphragm retraining.

## Abstract

# Maximal Inspiratory Pressure & Its Association with Hand Grip Strength & Body Mass Index in Overweight Young Adults- A Correlational Study

Tirumala Rao DB<sup>1</sup>, Murali Sivanandam<sup>2</sup>, Paul Daniel VK<sup>3</sup>

<sup>1</sup>MPT 2<sup>nd</sup> Yr Student RV College of Physiotherapy, Bangalore.

<sup>2</sup>Associate Professor, HOD, RV College of Physiotherapy, Bangalore.

<sup>3</sup>Professor, HOD, RV College of Physiotherapy, Bangalore.



Corresponding Author - D. B. Tirumala Rao (tirumalarao64@gmail.com)

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## Background

The measurement of maximal Inspiratory pressure is important in the evaluation of the strength of diaphragm. There is a paucity of data done on maximal Inspiratory pressure in the young adult Indian population who fall in the overweight category. Hand grip strength is a predictor of upper extremity function & changes in muscle strength & ability to perform activities of daily living. Body mass index is a critical indicator of physical health; however the relationship between hand-grip strength, maximum Inspiratory pressure and body mass index has not yet been thoroughly examined. This study aims to examine the relationship between hand-grip strength, body mass index & maximum Inspiratory pressure (Pimax) in overweight young adults.

## Methods

Two hundred subjects were selected through purposive sampling. Baseline data of demographics and anthropometric data of the subjects (Both Genders) like age, height weight and body mass index and hand dominance were recorded. The Maximal inspiratory pressure was measured using a capsule sensing pressure gauge using a standard protocol. The hand-grip strength was measured using a charder hand dynamometer® for both the dominant and the non-dominant hand using a standard protocol.

## Results

The mean ( $\pm$  standard deviation) Maximal inspiratory pressure was 49.01( $\pm$ 20.24)cm H<sub>2</sub>O, BMI was 23.71( $\pm$ 0.61), Handgrip strength (right) were 31.40( $\pm$ 8.87) kg/cm<sup>2</sup>, Hand grip strength (left) were 27.94( $\pm$ 8.17)kg/cm<sup>2</sup> respectively Maximal inspiratory pressure, Hand grip strength and Body mass index showed a highly significant correlation ( $P < 0.001$ ). The correlation of maximal inspiratory pressure, hand grip strength & BMI shows a positive linear trend.

## Conclusion

The results showed significant positive correlation between hand grip strength, Maximal inspiratory pressure and body mass index.

## Keywords

Inspiratory Muscle strength, Maximal Inspiratory pressure, Hand grip strength, Over-weight, Young adults.

## Abstract

# Type of Matured Pincer Grasp and Fine-Motor Development in Preterm Children at the Age of 3-4 Years

Iyer Raksha Umesh<sup>1</sup>, Rajeswari M<sup>2</sup>, Sivakumar R<sup>3</sup>

<sup>1</sup>Ms. Iyer Raksha Umesh is pursuing her final year of postgraduate in Master of Physiotherapy Neurosciences in Faculty of Physiotherapy, Sri Ramachandra Institute of Higher Education and Research, Porur, Chennai, Tamilnadu.

<sup>2</sup>Associate Professor, Sri Ramachandra Institute of Higher Education and Research, Porur, Chennai, Tamilnadu.

<sup>3</sup>Principal and Professor, Sri Ramachandra Institute of Higher Education and Research, Porur, Chennai, Tamilnadu.



Corresponding Author - Mrs. M. Rajeswari (rajeswarimuthusamy2021@gmail.com)

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## Introduction

Preterm infants (PTI) are defined as those born before 37 weeks of completed pregnancy/ less than 259 days. PTI have likelihood for subtle changes in gross and Fine-Motor Development (FMD). At preschool age, fine-motor impairments are more prevalent which may affect aspects of daily functioning such as eating, buttoning & writing which may affect integration and performance at school. Typical grasp development required for writing appear from 3.5 months of age as immature grasp and by 3-4 years of age mature grasp development takes place Eg. Tripod grasp. The tripod grasp is the most efficient grasp which offers a high level of precision and control and essential for Fine-motor activities like writing, buttoning, lacing etc. Lateral tripod, quadrapod grasp albeit mature grasp, are considered atypical grasp and observed in 25%-48% of students, which may affect functional activities & children may have difficulty in learning to write in preschool and kindergarten classrooms. To find out the type of mature pincer grasp and to know its relationship with the Fine Motor Development level in Preterm infants.

## Methods

Cross-sectional study – PTI (3- 4 years) - included after getting consent from mothers/caretakers. The type of grasp was identified, later FMD level assessed by Peabody Developmental Motor Scale. For Fine-motor component-the summation from grasping and visuomotor integration subset gives Raw Scores, Standard & Fine-motor quotient scores(FMQs) and interpretations were made.

## Results

On analysis of 10 preterm children, we identified 4 different grasps. 3 children showed Tripod grasp with mean FMQs=111.6(above average), 3 children showed Quadrapod grasp with mean FMQs=82.6(below average), 1 child had Lateral Tripod grasp with FMQs=72(poor) & 3 children showed Palmar Supinate Grasp with mean FMQs=58(very poor).

## Conclusion

Children with Tripod and Quadrapod grasps showed near normal FMD compared to other mature pincer grasps. The study insists on proper identification of these subtle changes in preterm children and the need to provide, (Proper Mature Grasp Development & Fine-motor) training at an early age malleable age (golden age) for improving functional ability of PTI at school.

## Keywords

Typical/Atypical Grasp, Fine Motor Development, Preterm Preschool Children.

## Abstract

# Menopausal Symptoms and Physical Activity – A Review

Lavanya N<sup>1</sup>, Sathyaprabha B<sup>2</sup>

<sup>1</sup>Ms. N. Lavanya is pursuing her final year of post graduate in Master of Physiotherapy Women's Health in Faculty of physiotherapy, Sri Ramachandra institute of higher education and research, Porur, Chennai, Tamil Nadu.

<sup>2</sup>Associate Professor, Sri Ramachandra Institute of Higher Education and Research, Porur, Chennai, Tamilnadu.



Corresponding Author - Mrs. B. Sathyaprabha (bsathyaphysio@gmail.com)

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## Background

Menopause is the cessation of ovarian function represented by absence of menses for at least 12 months. During this period, the declining estrogen level causes a wide range of symptoms. Women experience vasomotor, physical and physiological problems, which reduce their quality of life. Studies suggest that physical activity reduces the menopausal symptoms. The aim of this study, therefore, is to systematically review existing evidence and add a quantitative examination on the effect of physical activity on the reduction of menopausal symptoms and improve the quality of life in menopausal women.

## Methods

Studies of women with at least one menopausal symptom, Studies comparing exercise with no active treatment, RCTs of human published in English were included. Studies of menopausal women that did not mention any menopausal symptoms as inclusion criteria were excluded. A literature search was conducted on PubMed, CINAHL, Pedro, Cochrane library, EMBASE, Google scholar, along with references searching for articles published in English. The terms included in search were Menopause, Menopausal symptoms, Physical activity, Post-Menopausal Women, Quality of life. Two Independent reviewers selected the studies and extracted the data

## Results

Twenty articles identifying the relationship between physical activity, quality of life and menopausal symptoms were included. Articles that were published between 2000 to 2019. Evidence shows that the impact of menopause on quality of life is not same in the menopausal transition and it depends on various factors such as physical, psychosocial and lifestyle changes. This study shows positive effects of physical activity on quality of life, menopausal symptoms in menopausal women.

## Conclusion

Collectively, these reviews suggest that physical activity and structured exercise program is effective in reducing vasomotor symptoms, improving quality of life in menopausal women.

## Keywords

Menopause, Menopausal symptoms, Physical activity, Menopausal Women, Quality Of Life.

## Abstract

# Effects of Biofeedback Training on Pain, Stiffness and Range of Motion in Patients with Osteoarthritis Knee.

Pritika Rana<sup>1</sup>, Senthil P<sup>2</sup>, Shenbaga Sundaram Subramanian<sup>3</sup>

<sup>1</sup>Ms. Pritika Rana is pursuing her final year of post graduate in Master of Physiotherapy Orthopaedics in Chettinad School of Physiotherapy, CARE, Chennai, Tamil Nadu.

<sup>2</sup>Prof/ Dean i/c, Chettinad School of Physiotherapy, CARE.

<sup>3</sup>Assoc Prof, Chettinad School of Physiotherapy, CARE.



Corresponding Author - Dr. Senthil .P ([senthil.p@care.edu.in](mailto:senthil.p@care.edu.in))

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## Background

Osteoarthritis (OA) is an increasingly common musculoskeletal disorder with lack of effective prevention, and its prevalence increases with age. OA causes pain and impairment in body functions such as muscle strength, range of joint motion, and joint stability. The term “functional” relates to those activities that most closely resemble day-to-day activities, such as rising to stand, ascending and descending stairs, stepping, walking, squatting and lunging. Objective: To determine effectiveness of Biofeedback training on Pain, Stiffness and range of motion (ROM) in patients with Osteoarthritis Knee.

## Methods

15 subjects were selected through purposive sampling. Baseline data of demographics and anthropometric data of the subjects (Both Genders) like age, height weight and body mass index were recorded. The Pain, Stiffness and Physical function were measured using WOMAC questionnaire. The range of motion was measured using a goniometer.

## Results

The mean difference of Pain was 6.733, Stiffness was 1.933, Physical function was 5.2 and ROM was -11.333. WOMAC and range of motion (ROM) showed a highly significant ( $P < 0.001$ ).

## Conclusion

The results showed significant on Pain, Stiffness and Physical function and ROM.

## Keywords

Knee osteoarthritis, Pain, Stiffness, Range of motion.

## Abstract

# Functional Based Physiotherapy Intervention for Stroke Rehab - Upper Limb

Durga N<sup>1</sup>, Akshaya V<sup>2</sup>, Kamalakannan M<sup>3</sup>

<sup>1</sup>UG Student Saveetha College of Physiotherapy, SIMATS, Chennai.

<sup>2</sup>UG Student Saveetha College of Physiotherapy, SIMATS, Chennai.

<sup>3</sup>Assistant Professor, Saveetha College of Physiotherapy, SIMATS, Chennai.



Corresponding Author - Dr. Kamalakannan .M (Kamah1712@gmail.com)

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## Introduction

Stroke is one of the leading causes of death and disability in India. As Middle Cerebral Artery (MCA) stroke is very common, Upper Limb function is impaired at most. It is estimated that about 20% of subjects do not recover from the disuse of the upper limb and the most of the subjects around 65-80% undergo a partial recovery after stroke. Loss of functionality in use of the upper limb is one of the main factors affecting disability, an independent predictor of quality of life. The upper limb, especially the hand is important for a person's ability to complete activities of daily living which make rehab more difficult but essential for a fully functional Lifestyle.

## Objective

The objective of this poster presentation is to give an idea on the rehabilitation technologies and functional based task training which can be used for the upper limb post-stroke rehabilitation.

## Methods

Three points must be considered in the recovery of upper limb function 1.increased passive range of motion will damage soft tissues around the paretic shoulder joint, 2.They should not allowed to encourage learned non-use of the affected arm, 3.Any movement that predispose to subluxation should not be encouraged . Active range of motion can be encouraged, but it should not go beyond 90 degree or to be stopped when it is painful. We have discussed functional based task training focusing on the closed chain exercises (Weight-bearing activities), Open chain exercises (Reaching activities), Uni-lateral and Bi-lateral hand task. All these kinds of functional based task training maintains tissue length, improves proprioception, recruits the

muscle, improves inter limb coordination and the fine movements of the hand. Along with this, Rehabilitation technologies like virtual reality, smart board games, smart peg board, smart glove, finger extender and mirror box promote motor and sensory learning were also explained.

## Conclusion

The functional based task training and rehab technologies contribute to motor relearning program and understanding of brain plasticity-Brain reorganization to improve arm and hand function. Functional based task training along with the use of rehab technologies could result in a faster motor and sensory recovery on post- stroke patients.

## Keywords

Stroke, acute Middle Cerebral Artery stroke, functional Rehabilitation, Rehab technologies, Virtual reality.



## Abstract

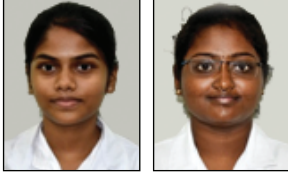
# Exercise and Activity in Pain Management

Nivetha K<sup>1</sup>, Haripriya D<sup>1</sup>, Shenbaga Sundaram Subramanian<sup>2</sup>, Senthil P<sup>3</sup>

<sup>1</sup>Nivetha K and Haripriya are pursuing their Second year of undergraduate in Bachelor of Physiotherapy in Chettinad School of Physiotherapy, CARE, Chennai, Tamilnadu.

<sup>2</sup>Assoc Prof, Chettinad School of Physiotherapy, CARE.

<sup>3</sup>Prof/ Dean i/c, Chettinad School of Physiotherapy, CARE.



Corresponding Author - Dr. Subramanian .S (dr.subramanian@care.edu.in)

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## Background

Pain is the most common problem that every one of us faces in our daily life. On an average in India by the prevalence rate of 19.3%, which translates into 180–200 million adults having CP. International Association for Study of Pain (IASP) defines pain as “An unpleasant sensory and emotional experience associated with, or resembling that associated with, actual or potential tissue damage.” For people suffering from pain, their initial response is to avoid activity and seek rest. And yet exercise therapy is often prescribed as a treatment option to manage pain. There are known benefits of exercise and regular physical activity. CDC lists following as the benefits of physical activity: controls weight, reduces risk of cardiovascular disease and metabolic disease, reduces risk of some cancers, strengthens bones and muscles, improves mental health and mood, and improves ability to do daily activities. AIM: To get the desired Exercise Induced Hypoalgesia by following appropriate intensity and frequency of exercise.

## Methods

There are two types of exercises, they are aerobic and resistance exercise. Aerobic exercise are any type of exercise that target at cardiovascular conditioning and it should target larger muscle groups, involve repetitive muscle contraction and elevate resting heart rate to target heart rate for at least 20 minutes. Resistance exercise should consists of 45 min of lifting 3 sets of 10 reps at 75% of 1RM, which included bench press, leg press, pull downs, and arm extensions.

## Inference

The mechanical analysis will further provide insights on the application of therapeutic exercise to achieve desired EIH in pain management. The presentation may further create awareness among physiotherapists for prescribing proper Intensity and frequency of Exercise.

## Keywords

Pain, Exercise Induced Hypoalgesia, Aerobic exercise, Resistance exercise.

## Abstract

# Role of Physiotherapy in patients with Covid 19

Selsia S<sup>1</sup>, Shenbaga Sundaram Subramanian<sup>2</sup>, Senthil P<sup>3</sup>

<sup>1</sup> Selsia is pursuing her Second year of undergraduate in Bachelor of Physiotherapy in Chettinad School of Physiotherapy, CARE, Chennai, Tamilnadu.

<sup>2</sup> Assoc Prof, Chettinad School of Physiotherapy, CARE.

<sup>3</sup> Prof/ Dean i/c, Chettinad School of Physiotherapy, CARE.



Corresponding Author - Dr. Subramanian .S (dr.subramanian@care.edu.in)

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## Background

Alongside doctors and nurses, physiotherapists have played a key role in the care and treatment of COVID – 19. Outside of corona virus care; physiotherapists are continuing to help other patients with their injuries and movement problems during the pandemic. Although a productive cough may be a less common symptom (34%), physiotherapists may be indicated if patients with COVID-19 present with copious airway secretions that they are unable to clear independently.

## Aim

The broad aim of this presentation is to bring awareness about the advances in physiotherapy and role of physiotherapy in the pandemic novel corona virus.

## Methods

It has been proved that with the aid of high oxygen demand goes down and physiotherapy helps in strengthening the lungs and cardiovascular system. Physiotherapy has been advised along with the medicine can bring about progress in COVID 19 patients. In severe COVID 19 patients too physiotherapy has major role in recovery and rehabilitation. Exercises and breathing techniques like pursed lip breathing, aerobic exercise, diaphragmatic breathing, humming while exhaling is practiced among patients.

## Inference

Thus, physiotherapy has been reported in covid patients to experience reduced functional capacity. The goal of physiotherapy is to enable the patient to further increase physical activity and improve capacity to exercise.

“Medicine adds days to life; PHYSIOTHERAPY adds days to life.”

## Keywords

Physiotherapy, Breathing Exercise, COVID 19.

## Abstract

# Barriers and Facilitators of Exercise Experienced By Polycystic Ovarian Syndrome Patient – Mixed Method Scoping Review

Menmozhi T<sup>1</sup>, Uma K<sup>2</sup>, Ponmathi P<sup>3</sup>

<sup>1</sup>Ms. Menmozhi T is pursuing her final year of post graduate in Master of physiotherapy Women's Health in Faculty of Physiotherapy, Sri Ramachandra Institute of Higher Education and Research, Porur, Chennai, Tamil Nadu.

<sup>2</sup>Ms. Uma K is pursuing her final year of post graduate in Master of physiotherapy Women's Health in Faculty of Physiotherapy, Sri Ramachandra Institute of Higher Education and Research, Porur, Chennai, Tamil Nadu.

<sup>3</sup>Associate Professor, Sri Ramachandra Faculty of Physiotherapy, Sri Ramachandra Institute of Higher Education and Research, Chennai.



Corresponding Author - Mrs. Ponmathi .P (ponmathi.p@sriramachandra.edu.in)

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## Background

Polycystic Ovarian Syndrome (PCOS) is an endocrine disorder affecting mostly women of reproductive age. Exercise is a first line of treatment recommended for PCOS and used in all age. Exercise can reduce the level of androgen and insulin in PCOS and improve reproductive, metabolic and psychological features. Exercise ranges from (strength, endurance, HITT, aerobic, stretching). Different researches says that only half of the subject complete exercise programme due to lack of regular follow up, but yet 50% exercise regularly. The main objective of this review is to identify the exercise barriers and facilitators experienced by PCOS patient.

## Methods

A literature search was conducted on PubMed, CINAHL, Pedro, Cochrane library, EMBASE, Google scholar along with references searching for articles published in English, were searched for qualitative and quantitative articles addressing barriers, facilitators and preferences for exercise in PCOS patient. The terms included in search were barriers to exercise, facilitators to exercise, physical activity in PCOS. Quality assessment was performed by two independent reviewers using the Mixed Methods Appraisal Tool.

## Results

Eleven studies were included. Lack of time, and low motivation was the commonly reported barrier followed by unsupportive partner or family to initiating or maintaining exercise. The most common facilitators are support by health professionals, peers, family or friends.

## Conclusion

Insufficient time / time pressure and low motivation were key barriers to exercise for PCOS patient. Identifying barriers and facilitators to exercises may help physiotherapist to overcome barriers and increase exercise adherence and confidence in PCOS population.

## Keywords

Polycystic Ovarian Syndrome, Physical activity, Exercise, Barriers, Facilitators.