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MPT Project Report Summary

Project title	Kinesthetic function among people with Diabetes Mellitus with and without frozen shoulder: A scoping review
Name of Guide	Dr. Rajani Mullerpatan
Name of Co-Guide	Dr. Mamta Shetty (PT)
Name of candidate/s	Dr. Neena Varghese (PT)
Duration of project	12 Months
Approval date	29th January, 2021
Submission date	15th February, 2021
Project Summary	
Purpose	Kinesthesia is defined as ability to perceive movement by providing joint stability, postural control and motor control. It is used to describe joint position sense or ability to detect movement. A deficit in kinesthetic evaluation has been associated with upper extremity dysfunction. Reduced kinesthetic awareness and proprioceptive inaccuracy is reported among people with type 2 diabetes mellitus. Frozen shoulder in conjunction with type 2 diabetes further reduces kinesthetic awareness and minimizes shoulder function. There is lacuna in literature reporting significance of shoulder kinesthesia in frozen shoulder among people with and without diabetes mellitus. Approaches to enhance kinesthesia among people with frozen shoulder could improve shoulder function and reduce the possibility of injury
Objectives	The present study aims to explore kinesthetic deficit in shoulder among people with diabetes mellitus with and without frozen shoulder.
Methods	A literature search was conducted in PUBMED, Cochrane, CINAHL and Science Direct. A total of 15 articles were considered in this review based on inclusion criteria.
Results and Conclusion	Findings from the present review reports reduced kinesthetic function among people with diabetes mellitus with and without frozen shoulder. With frozen shoulder, an individual experiences stiffness of peri articular structures leading to reduced mobility and altered shoulder kinematics. Decreased ability to detect joint position is detected with higher levels of shoulder elevation (above 90°).Kinesthesia decreases at higher levels of shoulder elevation because the effort required by muscles and tendons to maintain the shoulder at higher degrees of elevation is more. Diabetes mellitus together with frozen shoulder increases the nociceptive fibres and decreases the strength of shoulder muscles. Kinesthetic function is reduced more among people with diabetes with frozen shoulder than those with diabetes without frozen shoulder because structural alterations, capsular thickening and muscular scarring are more predominant

	among people with diabetes with frozen shoulder. Severe reduction in kinesthesia is observed during basic activities of daily living such as bathing and grooming as well as in performing recreational activities requiring repetitive overhead motion of shoulder, such as playing baseball and badminton. Reduced kinesthesia was also observed in occupational tasks demanding labor. Biomechanical and histological alterations reported in frozen shoulder, along with sedentary lifestyle and physical dependency suggests that kinesthesia is affected more among people with diabetes mellitus with frozen shoulder. Future research is recommended on kinesthetic rehabilitation for frozen shoulder.

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MPT Project Report Summary

Project title	Evaluation of physical function in critically ill patients during ICU stay and post ICU discharge.
Name of Guide	Dr.Bela Agarwal (PT)
Name of Co-Guide	Dr. Bhoomika Sawant (PT)
Name of candidate/s	Dr. Damini Aglawe
Duration of project	12 Months
Approval date	29th January, 2021
Submission date	15th February, 2021
Project Summary	
Purpose	To assess physical function in critically ill patients during and post ICU hospital stay, until point of discharge.
Objectives	Objective 1.1: To evaluate physical function status of patients during and post ICU hospital stay, until point of discharge. Objective 1.2: To evaluate applicability of physical activity scales (IMS, FSSICU, PFIT and FIM) in measuring functional status during post ICU hospital phase. Objective 1.3: Identify functional limitations in patients during post ICU hospital stay, until point of discharge.
Methods	*Participants: Critically ill patients admitted in MICU and SICU of age group 18-60 years who are referred for physiotherapy treatment and fulfilling the inclusion and exclusion criteria. *Sample size: All patients fulfilling inclusion and exclusion criteria during course of the study from January 2020 to December 2020 will be included in the study. *Study procedure: Observational study will be carried out to evaluate daily physical activity in critically ill patients using physical activity scales IMS, FSS-ICU, PFIT and FIM during ICU stay and post ICU discharge. Patient will be categorized on basis of Glasgow Coma Scale (GCS) and Berg Balance Scale (BBS) assessment into levels according to the functional status of the patient. Physiotherapy treatment involving conventional therapeutic techniques will be instituted to the patient based on the protocol guidelines.

Results	For simplification of statistical analysis three data points were selected and data was analyzed accordingly. Three selected data points were functional measures at ICU admission, ICU discharge and hospital discharge. Mean and percentage of scores were calculated for each scale component at all three data points; and for physical function tests at point of hospital discharge. One-way ANOVA was applied for analysis of variance at the three data points. Tukey post hoc test was implemented to find out statistically significant difference or similarity among specific groups based on data points. Statistically significant results were demonstrated by all components of each outcome measure. Satisfactory improvement in physical function was seen during the entire length of ICU and hospital stay. Weight-bearing ambulatory activities such as walking and stair climbing showed under achievement even at point of hospital discharge.
Conclusion	Objective assessment of physical function helps in monitoring and understanding level of functional status throughout hospitalization phase. Better insight of patients' limitations to functional activities can help goal-setting and planning of physiotherapy care. Implementing early rehabilitation, continuing physiotherapy until hospital discharge and implementing home-based rehabilitation after hospital discharge will help patients to recover optimum physical function and independence in activities of daily living.

Figure 1: Patient admitted in intensive care unit (ICU), on ventilator support through endotracheal tube and multiple invasive and non-invasive lines for monitoring and treatment purposes.

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MPT Project Report Summary

Project title	Review of physical fitness and biomechanical demands in Indian classical dancers.
Name of Guide	Dr Rajani Mullerpatan
Name of Co-Guide	Dr Juhi Bharnuke (PT)
Name of	Dr Karishma Bobade (PT)
Duration of project	12 months
Approval date	29/1/2021 reference number – MGM/DCH/IEC/023/2021
Submission date	15/2/2021
Project Summary	
Purpose	To explore physical fitness, biomechanical demands and injury profile in Indian classical dancers to help them overcome the obstacles and enhance their performance as well as prevent early retirement.
Objectives	To review studies on physical fitness , biomechanical demands and injury profile in Indian classical dancers in last 15 years
Methods	Databases such as PubMeb, Google Scholar, Cochrane and PEDro were searched systematically according to the PRISMA Scoping review guidelines 2009. All studies done in from 2005 to 2020 were included and dancers of all age and gender were included

Results	RCTs, comparative observation and cross sectional studies of level I, III, IV and V evidences were reviewed which revealed dancers identified higher biomechanical demands during *tatta adavu* and landing on ankles post a jump
	The joint angle was higher in Bharatanatyam dancers when compared to Ballet dancers causing instability, pain and injury
	an classical dancers had higher physical fitness when compared to yoga practitioners, physical educators and non-dancers
	The prevalence of injuries in Indian classical dancers is higher due to muscle length and imbalance impairments displayed in this population.
Conclusion	Indian Classical dancers possess higher Physical fitness and Kathak dancers are more prone to ankle instabilities. This population demands higher Physical and biomechanical demands especially in lower limb increasing risk of injury and musculoskeletal pain.

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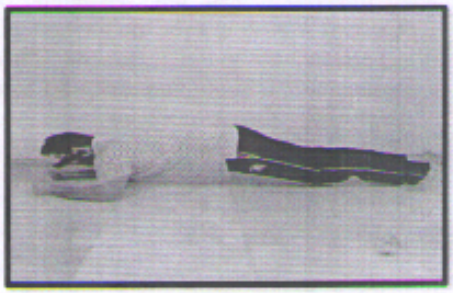
MPT Project Report Summary

Project title	Effect of '3 S' intervention on physical fitness, psychological well-being and quality of Life in Healthy adults.
Name of Guide	Dr Bela Agarwal
Name of Co-Guide	Dr. Payal Murkudkar (PT)
Name of candidate	Dr. Mihir Mange (PT)
Duration of project	12 months
Approval date	29th January, 2021
Submission date	15th February, 2021
Project Summary	
Purpose	Habitual physical activity plays an important role in maintaining an active lifestyle for healthy adults. Perceived lack of time has been proven to be the most common personal barrier to participation in exercises also the ongoing COVID-19 pandemic situation has led to lack of available time for exercises due to ongoing online occupational activities. Hence, there is a need of simple, novel, multidimensional interventions to improve all components of physical fitness to obtain the benefits of physical activity while keeping the motivation level high. Skipping, Suryanamaskar and Squatting (3 S) are 3 simple exercises which can be performed in any setting without the need of any specialized equipment and minimal training. Since, in the pandemic times in person intervention is challenged this study was designed to evaluate the effect of telemetric '3 S' intervention on physical fitness, psychological wellbeing, and quality of life in healthy adults which is compared with a walking program.
Objectives	To measure physical fitness using functional tests To measure psychological well-being and quality of life using functional scale. To evaluate the effect of '3 S' intervention on physical fitness, psychological well-being, and quality of life in healthy adults (Experimental group) To evaluate the effects of walking program on physical fitness, psychological well-being, and quality of life in healthy adults (Control group)

Methods	Sixty participants (30 males, 30 females) were allocated to Group A: Experimental group ('3 S' group) and 60 participants to Group B: Control group (Walking group), physical fitness tests were evaluated at 0 weeks 4 weeks and post 8 weeks, which included- Anthropometric data; Muscular Strength (Jump and Reach Test, Trunk Curls, Plank Test,); Muscular endurance (30 sec Chair-Stand Test and 30 Sec Deep Squat Test); Cardiorespiratory endurance (6 Minute Walk Test) ; Flexibility (Modified Sit and Reach Test); Agility (Timed Up and Go Test /TUG test); Perceived Stress Scale and WHO-QOL BREF scale preintervention via video call sessions. Telemetric '3 S' intervention (Skipping, Suryanamaskar and Squatting) was administered to the experimental group that is for 8 weeks, while control group underwent walk program.
Results	Greater improvement was observed in Vertical jump test distance, Plank test time, 30 seconds deep squat test repetitions, 6 Minute walk test distance, modified sit and reach test distance following 3S intervention compared to walking intervention. Greater effect size was observed in 6 Minute walk test in Walking intervention group compared to 3S intervention group Greater effect size was observed in Psychological health domain in WHO-QOL BREF Scale score in 3S intervention group compared to Walking group.
Conclusion	An 8 week '3 S'- Skipping, Suryanamaskar and Squatting intervention is effective in improving muscular strength, endurance, power, cardiorespiratory endurance and flexibility as compared to the walking. Also, 8 week '3 S' intervention and walking intervention individually improves psychological well-being and quality of life in healthy adults.



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MPT Project Report Summary

Project title	A review on effect of suryanamasakar on physical fitness in children
Name of Guide	Dr. Bela Agarwal (PT)
Name of Co-Guide	Dr. Hiranmayee Bagwe (PT)
Name of candidate	Dr. Abhijeet Kanojia (PT)
Duration of project	12 Months
Approval date	29th January, 2021
Submission date	15th February, 2021
Project Summary	
Purpose	Suryanamaskar, a composite yogasana is known to provide a wide array of benefits to the musculoskeletal, cardiovascular, neurological, gastrointestinal and endocrine system. These benefits of Suryanamaskar have not been systematically reviewed in children. Increasing physical inactivity in children necessitates exploration of activities such as Suryanamaskar that can confer health benefits.
Objectives	The purpose of this study was to review literature regarding benefits of Suryanamaskar on physical fitness in children.
Methods	Primary source articles published in English peer-reviewed journals were included. Literature review was carried out using PubMed, Cochrane, Science Direct, and Google Scholar from 1980-2020. Key word used was 'Suryanamaskar', 'physical fitness', 'sun salutation', 'yoga', and 'children'. Seven studies satisfied the inclusion criteria. All included studies were randomized controlled trials. Methodological quality of studies was assessed by using Physiotherapy Evidence Database (PEDro) scale. The effect of Suryanamaskar training on physical fitness component such as flexibility, muscle strength, cardio-respiratory endurance and cognition were reviewed.

Results	Seven studies matched the inclusion criteria. All seven studies were classified as fair quality with high risk of bias. One study reported improvement in musculoskeletal strength and endurance following Suryanamaskar. Two studies demonstrated increase in flexibility of hip joint, wrist joint, hamstrings and Dorso-lumbar fascia. Improvement in cardio-respiratory variables such as Systolic blood pressure, and Diastolic blood pressure, Peak Expiratory Flow Rate, Forced Vital Capacity, Forced Expiratory volume, Heart rate and Vital capacity were observed in three studies. Two studies reported improvement in cognition after performing well in Digit Letter Substitution Task (DLST) following Suryanamasakar intervention.
Conclusion	Suryanamaskar training confers health benefits and improves physical fitness components such as muscle strength, flexibility, cardio-respiratory endurance, and cognition. Suryananamskar can emerge as a useful tool to promote physical fitness in children. High quality longitudinal randomized control trials need to be undertaken to confirm the same.

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MPT Project Report Summary

Project title	Determinants of hand function in children and adolescent with Down's Syndrome- A Scoping Review
Name of Guide	Dr. Meruna Bose
Name of Co-Guide	Dr. Rajani Mullerpatan Dr. Shrutika Parab (PT) Dr. Mamta Shetty (PT)
Name of candidate	Dr. Neha Padia (PT)
Duration of project	12 months
Approval date	29th January, 2021
Submission date	15th February, 2021
Project Summary	
Purpose	Down syndrome (DS) is an autosomal chromosomal disorder leads to physical, intellectual, motor, functional impairments. Hand function of DS individuals is significantly altered when compared with that of typically developed, also there is a characteristic reach-to-grasp and object manipulation pattern that was observed and studied in different studies. The comprehensive functions include muscle strength (grip and pinch strength), manual dexterity, gross and fine motor skills. Characteristic differences that are studied often lacks with domain of smaller sample size, intellectual function, age-appropriate tests, outcome measures and instrumentation often incomplete tests.
	An alternative psychometrically equivalent test to measure same component of hand function in DS population have been studied and enumerated, at the same time advances in test procedures and modification in tests being used earlier and its comparison TD populations needs to be emphasised and roofed.
	In this scoping review we aimed at exploring comprehensive hand function of children and adolescent in DS.
	To study determinants of hand function in children and adolescent with Down Syndrome.
Objectives	We aimed at exploring upper extremity function and determinants of hand functions in children and adolescent with Down Syndrome Review its effects on different motor task performance, daily living activities and instrumental daily living activities.

Methods	The studies reporting evaluation of hand function in children and adolescent with Down Syndrome were eligible. We searched databases of PUBMED, Cochrane, ScienceDirect. The methodology in this review will be described in narrative form
Results	The survey comprised of 41,884 scientific papers published nationally and internationally. Out of which 84 full text articles were selected for review, amongst these 55 full text articles were excluded. Out of total 6 articles were not accessible. Amongst all these a total of 29 articles were included and studied in this review based on inclusion criteria.
Conclusion	We inferred that, a central level alteration along with peripheral characteristics results into atypical pattern of movement and delayed acquiring adjustments to different objects and environments. We also suggest that further evaluation of hand function in Down Syndrome population should be performed considering physical characteristics of upper extremity and an adequately addressed to various determinants of hand function with a clinically reliable tool.

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MPT Project Report Summary

Project title	A review on efficacy of trunk targeted interventions for improving postural control among children with cerebral palsy
Name of Guide	Dr. Meruna Bose
Name of Co-Guide	Dr. Triveni Shetty (PT)
Name of candidate/s	Dr. Aamreen Ryain (PT)
Duration of project	12 Months
Approval date	29th January 2021
Submission date	15th February 2021
Project Summary	
Purpose	Cerebral Palsy (CP) refers to a group of permanent developmental ailments of posture and movement ascribed to non-progressive lesion of a developing brain leading to limitation in daily routine activities. Postural control which plays a significant role in attainment of gross motor functions such as sitting and standing is usually affected in children diagnosed with CP. Postural control constitutes of attaining and maintaining individual's position in environment for double purposes of alignment and stability. The trunk contributes significantly in governing the postural control mechanisms and also in establishment of balance reactions in developmental process There are many intervention studies performed to assess effects of different trunk exercises and regimen to improve postural control. However, a scarcity of literature is found in reporting its effectiveness and efficacy. Purpose of current study is to present a review on trunk targeted interventions, identified for treatment in CP children; to estimate efficiency and efficacy of these interventions on postural control.
Objectives	Review efficiency of trunk targeted exercises for improving postural control in sitting and standing position for children diagnosed with cerebral palsy.
Methods	This study was performed on the basis of PRISMA-scr guideline for scoping review. All the Randomized Controlled Trials (RCT), prospective/cohort studies and review articles, applying the trunk targeted training on postural control of children as the treatment for Cerebral Palsy in age group 1-15 years were included in this study Source of evidence were databases PubMed (2009-2019), Cochrane (2009-2019), and CINAHL(2009- 2019) for this scoping review. The methodology in this review is described in narrative form. Quality of study method was analysed using PEDro scale and the risk of bias was assess using Cochrane risk of bias tool. The level of evidence was determined on the basis of AACPDM level of evidence guideline. Following search terms were used to search all trials registers and databases: trunk intervention, core stability, core strengthening, trunk exercise, trunk strengthening, balance, Cerebral Palsy, postural control, and Targeted trunk intervention.

Results	A total of 14 studies with 454 sample size with mean age of 6+5.3 years were analysed. Ten articles included children at GMFCS level I; nine articles had children at GMFC level II; four articles had children at GMFCS level III, and 2 articles included children at GMFCS level IV. Five studies did not mention GMFCS level of participants. The duration of intervention ranged from 4 weeks to 12 weeks, except for one study with an intervention duration of 6 months. The frequency of the session was commonly thrice a week with mean session time of 45 minutes. Risk of bias assessed using Cochrane assessment tool was low for two studies, moderate for nine studies and high for three studies. Methodological quality of three studies was poor, nine studies had a good methodological quality and two studies had an excellent quality according to PEDro scale.
Conclusion	To conclude, trunk targeted training conducted on movable or fixed surface can be a good strategy in rehabilitation of CP children. There appears to be high quality evidence that task-oriented NDT based trunk targeted training improved sitting and standing postural control ability in spastic cerebral palsy children and moderate evidence in support of other trunk targeted interventions. This signifies the value of trunk exercises in rehabilitation of children diagnosed with CP. In future studies must assess long term effects of Trunk targeted training. An exploration on consequences of trunk targeted training on hypotonic and dyskinetic cerebral palsy is recommended. This review might provide a guide on avoiding thesame mistakes identified in studies reviewed for future researches.

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MPT Project Report Summary

Project title	Influence of surface and speed on the biomechanics of bounce rope skip
Name of Guide	Dr. Amrita Ghosh (PT)
Name of Co-Guide	Dr. Triveni Shetty (PT)
Name of candidate	Dr. Ankita S Vaghela (PT)
Duration of project	1 year
Approval date	29/1/2021
Submission date	15/2/2021
Ethical number	MGM/DCH/IEC/022/2021
Project Summary	
Purpose	Explore the effect of surface and speed on biomechanics of bounce rope skip .
Objectives	Evaluate and compare biomechanics of bounce rope- skip on 3 different surfaces. Evaluate and compare biomechanics of bounce rope- skip at 3 different speeds.
Methods	The study commenced after obtaining ethical approval from Institutional Ethical Committee Mahatma Gandhi Mission's Dental College and Hospital. Ten healthy adults between 18-25 years were recruited for the study after obtaining informed consent. Participants were instructed to perform rope skipping barefoot on three surfaces namely carpeted floor, soft mat surface and the artificial grass mat surface. Three trials of each of the above mentioned conditions were given to the participant and the best 10 jumps were recorded. A rest pause of 30 seconds was given after every trial. After the completion of 9 trials, the participant was given a rest pause of 2 minutes before the initiation of the next bounce rope skip activity. On identification of the surface which provided minimal lower extremity joint loading and kinematics, the speed evaluation was performed barefoot on the same surface at slow speed, self-selected speed and fast speed using metronome beats. Three trials of each of the above mentioned speeds were performed and the best 10 jumps were recorded. A rest pause of 30 seconds was given after every trial. After the completion of 9 trials, the participant was given a rest pause of 2 minutes before the initiation of the next bounce rope skip activity. Lower extremity joint loading and kinematics was analyzed using vicon 3D motion analysis.

Results	On soft mat surface ankle kinematics was significantly lower ($p <\_ 0.001$) during push off phase. Similarly the hip, knee and ankle kinematics was significantly low on the soft mat surface during the flight phase ($p<\_ 0.001$). The peak hip flexor moment was 41% and 36% lower on the soft mat surface compared to artificial grass mat surface and carpeted floor surface respectively ($p<\_ 0.001$). Knee flexor moment was 49% and 41% lower on the soft mat surface compared to artificial grass mat and carpeted floor surface respectively. Peak knee adductor moment was 7% and 32% lower at the slow speed compared to self - selected and fast speed respectively ($p<0.001$). Further the sagittal knee and ankle kinematics was found to be significantly low ($p<0.001$) at the slow speed
Conclusion	It was concluded that, performing bounce rope skip on the soft mat surface within the speed of 120 beats/ min (slow speed) and 130 beats /min (self – selected speed) reduces lower extremity joint loading and also improves jump performance.

Photographs:

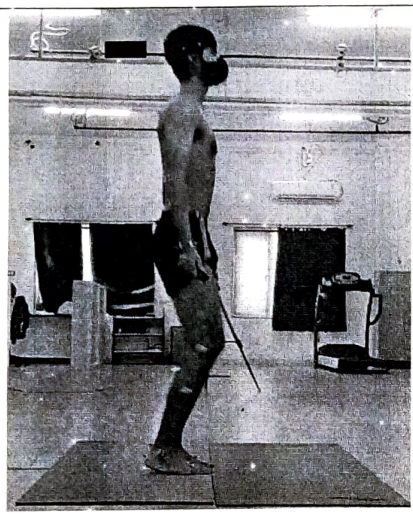

Fig 1: Mat surface(Landing phase of rope skipping)

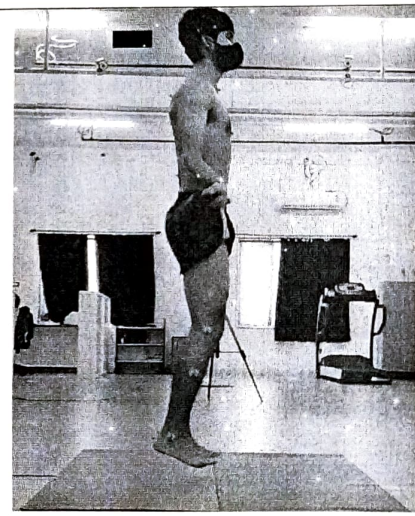

Fig 2: Mat surface (Flight phase of rope skipping)

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MPT Project Report Summary

Project title	A review on efficacy of Yoga intervention on osteoporosis in middle aged and older adults
Name of Guide	Dr. Rajani Mullerpattan
Name of Co-Guide	Dr. Triveni Shetty (PT)
Name of candidate	Dr. Purva Katariya (PT)
Duration of project	12 months
Approval date	29th January 2021
Submission date	15th February 2021
Ethical number	MGM/DCH/IEC/018/2021

Project Summary

Purpose	Review efficacy of Yogasana as an intervention for improving bone mineral density in middle aged and older adults
Objectives	Review efficiency of Yogasana intervention to maintaining bone mineral density and prevent risk of fracture. Outline an optimal treatment protocol based on the literature reviewed for improving bone mineral density in middle aged and older adults
Methods	Eligibility criteria: All Randomized Controlled Trials (RCT), prospective/cohort studies and review articles between 2015-20 that included Yoga intervention for osteoporosis and were published in English language were selected for review. Source of evidence: Articles were included from databases PubMed , Cochrane and CINHL Scopus , EMBASE 2015-20 Charting Method: The methodology described is in narrative form. Keywords: Yoga/Yogasana, osteoporosis, bone mineral density/BMD, DEXA/DXA, middle age, older adults, men, women.
Results	Present study included level of evidence1a,1b,2b according to Sackett's classification. Cochrane Review Bias Tool was assessed as judgment remarking high, low or unclear for individual elements from five domains namely selection, performance, attrition, reporting and other. Asanas in supine, prone, sitting, high sitting, crook lying, unipedal and bipedal stance position for minimum 24weeks to maximum 10 years were practiced in the included studies. DEXA/DXA was the common outcome measure used to measure BMD. Ashtanga Yoga practiced for 35minutes demonstrated no significant difference post intervention on BMD at right total hip (0.2%), femoral neck(0.9%), femoral trochanter(0.1%), spine L1-L4(0%) and left total hip (0.4%),femoral

	neck (0.1%) , femoral trochanter (0.8%).No change was seen in volumetric BMD, geometry and strength variations of tibia at 4%,38%, 66% .A twelve minute yoga regimen demonstrated a change on BMD level at lumbar spine L1-L4 (.02%), left hip (.01%) and left femur(.0002%) after 10 years of intervention which was not significant. Other study conducted in pre menopausal women from 35-50 years of age demonstrated non significant change in BMD levels (≦.01) after practicing Yoga for 8 months . Iyengar Yoga program conducted on 60-70 years adult men and women were assessed for BMD levels pre and post intervention. The Yoga intervention group showed difference at femoral neck (-0.74), femoral ward's angle(-0.73), femoral trochanter (-0.74), total femur(-0.74) which were not significant. In this study the resistance exercise group showed more change on BMD (-0.45%) than Yogasana (-0.74%) and (-1.16%) in control group but the changes were not significant. Guidelines provided by Stanford University have explained in detail indications and contraindications for performing Yoga. It suggested Modified Yogasana should be practiced in case of severe osteoporosis. These guidelines provided help in improving flexibility, strength, agility which reduces risk of fragility fractures , whereas these guidelines do not indicate any significant change in BMDo Long term practice of these asanas show significant health related change in indivuals with osteoporosis. All together this review concludes, all eight studies have shown positive effect of Yoga on agility, strength, flexibility and balance. Whereas, no significant change is noticed in BMD levels in patients having osteoporosis.
Conclusion	Yoga as an intervention can be used to improve strength, agility, flexibility and balance for osteoporosis in middle aged and older adults. Future Scope of study suggests to conduct studies for short duration and also focus on upper extremity bones BMD level.

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MPT II Research Project details (2018-2020)

Sr. No.	Name	Title
1	Hiloni Badani Guide : Dr. Rajani Mullerpatan	Exploration of Upper Extremity function among people with shoulder dysfunction with diabetes mellitus and effect of gomukhasana on shoulder function
2	Riya Khara Guide : Dr. Meruna Bose	Influence of motor cognitive training in people with Parkinson's Disease
3	Devashree Kadam Guide : Dr. Rajani Mullerpatan	Effectiveness of 12 weeks of eccentric strengthening exercise program of postero-lateral hip muscles on balance and foot function in subjects with chronic ankle instability
4	Shikha Patel Guide : Dr. Rajani Mullerpatan	Effect of Yoga on low back pain, physical and psychological (anxiety, depression and quality of life) functions in postpartum women
5	Rachel Nagarkar Guide : Dr. Meruna Bose	Effect of 12 yoga therapy on function and health related quality of life in people with stroke
6	Neha Raorane Guide : Dr. Bela Agarwal	Effect of 12 weeks of barefoot exercises on lower extremity functional fitness tests and running performance in sub elite marathon runners
7	Meena Thakker Guide : Dr. Rajani Mullerpatan	The effect of yoga on neck pain, muscle strength, function and psychological factors in sedentary workers with chronic mechanical neck pain
8	Sumedh Vaidya Guide : Dr. Bela Agarwal	Effect of yoga on bowling performance and physical fitness in bowlers

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CERTIFICATE

This is to certify that the dissertation entitled **"Effectiveness of Rest Period on Balance Control in Stroke - A Randomized Clinical Trial"** is a bonafide work by Prachi Ramesh Mundada under the guidance of Dr. Divya Jethwani as partial fulfillment of the regulations for the award of the degree of M.P.T. in Neuro-Sciences Physiotherapy.

We have great pleasure in forwarding it to MGM INSTITUTE OF HEALTH SCIENCES, (DEEMED UNIVERSITY u/s UGC Act, 1956), KAMOTHE, NAVI MUMBAI.

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Place: Aurangabad

PRINCIPAL:

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PG INCHARGE:

Dr. Divya Jethwani

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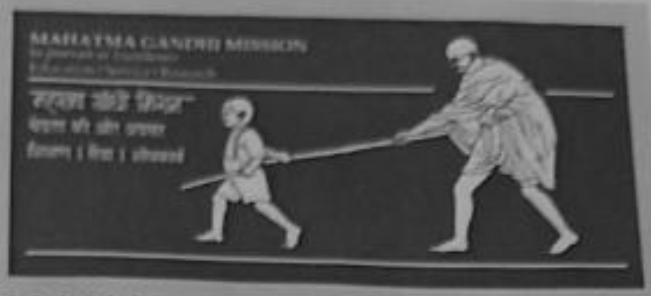

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