



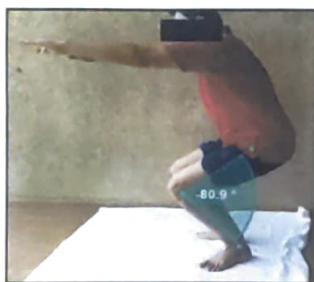
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**MGM SCHOOL OF PHYSIOTHERAPY**  
Sector-1, Kamothe, Navi Mumbai – 410209

**MPT (Musculoskeletal-Physiotherapy) Project Report Summary**

<b>Project title</b>	Exploration of Ground Level Activity Performance in the Elderly: A cross-sectional Study
<b>Name and signature of Guide</b>	Dr Rajani Mullerpatan
<b>Name and signature of candidate/s</b>	Miss Manasi Borse
<b>Duration of project</b>	1 Year
<b>Approval date</b>	12/7/2021 MGM/DCH/TEC/168/2022
<b>Submission date</b>	15/12/2022
<b>Project Summary</b>	
<b>Purpose</b>	To explore the ground level activity performance in the elderly.
<b>Objective</b>	The objective of this study was to analyze the influence of habitual exposure to ground level activity on knee motion, muscle strength, balance and cardio-respiratory endurance and identify factors influencing in order to prescribe life style behaviors for maximal functioning.
<b>Methods</b>	120 community-dwelling healthy elderly (aged 60-85 years, Males:Females-1:1 and Urban:Rural-1:1) were included. Exposure to ground level activities was recorded using MGM Ground Level Activity Exposure (MGM GLAE) questionnaire. International Physical Activity Questionnaire (IPAQ) was used to measure habitual level of physical activity. Motion in sagittal and frontal plane was captured during squat, cross leg sitting and kneeling using digital video camera. Knee flexion angle, Spatial-temporal variables namely-Ascent and descent time during squat, cross leg sit and kneel were computed using Kinovea software and motor strategy used to perform the activity was scored on the floor sitting-rising test. Muscle strength of lower extremity (30 Second Chair Stand Test), Cardio-respiratory endurance (Six Min Walk Test), balance (Berg Balance Test and Floor Square Step Test) and activities of daily living (Barthel Index) were evaluated.
<b>Results</b>	People from urban setting reported lower exposure to ground level activities [28.8 (27.3)]min/day, compared to rural people [487.7 (108.2)]min/day, (p<0.000). Knee angle during squatting [143.9(3.1)°] was greater in rural people compared to urban people [99.4(15.6)°], (p<0.05). Rural males demonstrated greater knee angles during kneeling [158.4 (3.1)°] compared to rural females [148.2 (40.5)°], (p<0.05). Males required shorter time for squatting and kneeling compared to females(p<0.05). Ascent and descent time for squatting



	was greater in urban people [7.9(3.7)]seconds and [7.8(3.7)]seconds compared to rural people [3.9(0.9)]seconds and [4.8(1.5)]seconds, (p<0.05). Ascent and descent time for kneeling was greater in urban people [11.8(5.1)]seconds and [12.1(5.0)]seconds compared to rural people [8.6(2.4)]seconds and [6.9(2.0)]min/day, (p<0.05). A weak negative co-relation was observed between age and IPAQ score [(Spearman's rho -0.239), (p-0.000)], total GLAE [(Spearman's rho -0.260), (p-0.000)], six min walk test [(Spearman's rho -0.294), (p-0.000)], Barthel index [(Spearman's rho -0.204), (p-0.000)].
<b>Conclusion</b>	Moderate exposure to high flexion activities is beneficial to maintain maximal functioning and physical fitness in the elderly and should be included as a component of routine physical activity.



**Figure 1: 2D movement analysis (Kinovea 9.5 version) for squatting**




**Figure 2: 2D movement analysis for Kneeling**




  
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**MPT (Musculoskeletal Physiotherapy) Project Report Summary**

<b>Project title</b>	Development of a two-dimensional method for evaluating movements of temporo-mandibular joint
<b>Name and signature of Guide</b>	Dr Rajani Mullerpatan
<b>Name and signature of candidate/s</b>	Miss. Bhumika Adsul
<b>Duration of project</b>	1 Year
<b>Approval date</b>	12/7/2021
<b>Submission date</b>	05/12/2022
<b>Project Summary</b>	
<b>Purpose</b>	To develop a reliable and valid two-dimensional tool for evaluation of temporo-mandibular joint movements.
<b>Objective</b>	The purpose of the study was to develop a video-graphic two-dimensional method for evaluating movements of temporo-mandibular joint and to establish test-retest and inter-rater reliability and criterion validity of a video-graphic two-dimensional tool for measurement of temporo-mandibular joint (TMJ) kinematics.
<b>Methods</b>	Thirty healthy volunteers (18-40 yrs.) were studied. Three different instruments - a clinical tool (digital vernier caliper), three-dimensional method (VICON 3D motion analysis system) and video-graphic two-dimensional method were used to measure mouth opening, lateral deviation and protrusion. To test reliability, one tester recorded videos of mouth opening, lateral deviation (right and left) and forward protrusion on two separate occasions one-week apart (test-retest reliability) and other two testers analyzed the videos separately (inter-rater reliability). For criterion validity, interclass correlation coefficient was used to examine agreement between two-dimensional method versus three-dimensional method and two-dimensional method versus vernier caliper. Bland-Altman plot was used to present the systemic differences between the two methods of evaluation. The newly developed method was used for evaluation of temporo-mandibular joint movements in ten subjects with temporo-mandibular joint disorders. The evaluated measurements of temporo-mandibular joint disorder group were compared with age and gender match healthy individuals.
<b>Results</b>	The video-graphic two-dimensional tool demonstrated excellent test-retest and inter-rater reliability for evaluation of mouth opening (test-retest ICC= 0.994, inter-rater ICC= 0.982), lateral deviation (right test-retest ICC=0.981, inter-rater ICC=0.920; left test-retest ICC=0.960,



	inter-rater ICC=0.994) and forward protrusion (test-retest ICC=0.964, inter-rater ICC=0.934). Intra-class correlation coefficient values for criterion validity were mouth opening (ICC= 0.989), lateral deviation (right ICC=0.996; left ICC=0.996) and forward protrusion (ICC=0.996). The mean values for temporomandibular joint disorder group were mouth opening (31.30 ± 2.63), lateral deviation right (6.15 ± 1.73), lateral deviation left (5.74 ± 1.52) and forward protrusion (2.73 ± 1.15). No significant difference between the group for all movements was observed.
<b>Conclusion</b>	Findings of present study conclude that video-graphic two-dimensional tool can be used to measure temporomandibular joint motion with excellent test-retest reliability, inter-rater reliability and validity. Hence, the tool can be recommended as a feasible method for measurement of temporomandibular joint kinematics in regular clinical practice and research setting.



**Figure 1: Facial markers for video-graphic two-dimensional method for evaluation of temporomandibular movements.**

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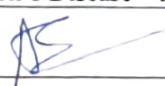

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**MPT (Neuro-Physiotherapy) Project Report Summary**

Project title	Dance Therapy as an Intervention to Improve Functional Performance in Patients with Parkinson's Disease – A Pilot Study
Name and signature of Guide	Dr. Amrita Ghosh (PT) 
Name and signature of candidate/s	Miss. Vaidehi Gharpure 
Duration of project	1 Year
Approval date	12/7/2021
Submission date	05/12/2022
<b>Project Summary</b>	
Purpose	To explore the effects of structured kathak-based exercises on functional performance in patients with Parkinson's disease.
Objective	Evaluate the effect of an 8-week structured Kathak-based exercise intervention on balance, gait, aerobic capacity, lower extremity functional strength and hand function in individuals with PD with Hoen and Yahr stage I-III.
Methods	Fifteen individuals with PD (Hoen and Yahr stage I-III) aged between 50-80 (mean $66 \pm 7.5$ ) years were recruited in the study through convenient sampling after obtaining institutional ethical permission. Baseline evaluation was performed using Berg Balance Scale, Timed Up and Go Test, Functional Reach Test for balance, Dynamic Gait Index, and Freezing of Gait questionnaire for gait, 6-minute walk test for aerobic capacity, lateral step test, anterior step test, 30-second heel raise and 30-second chair raise test for functional strength and Jebsen and Taylor hand function test. A post-evaluation was conducted after an 8-week structured kathak-based intervention administered for 60 minutes, 3/week by a trained kathak dancer and qualified physiotherapist.
Results	Results indicated an 8.7 % improvement in balance, 8% improvement in gait variables, 17% increase in lower extremity functional strength, 7.80% improvement in aerobic capacity, and 16% improvement in hand function. $p < 0.05$ was considered statistically significant.
Conclusion	The present study concludes that a structured kathak-based intervention is effective in improving gait, balance, functional strength, hand function, and aerobic capacity in individuals with PD.





**Fig 1**  
A study participant learning the hand gesture in kathak Ghatnika with the therapist



**Fig2**  
A study participant learning the hand gesture in kathak Ghatnika with the therapist



**Fig 3**  
Study Participant performing Tatkar with the therapist

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**MPT ( Neuro-Physiotherapy) Project Report Summary**

Project title	A Study to Assess Ground Level Activity in Stroke Patients
Name and signature of Guide	Dr. Amrita Ghosh (PT) 
Name and signature of candidate/s	Miss. Chetna Kunti 
Duration of project	1 Year
Approval date	12/7/2021
Submission date	05/12/2022
<b>Project Summary</b>	
Purpose	To determine the quantity of ground level activities and explore the factors affecting the performance of these ground level activities in Stroke patients.
Objectives	To determine the quantity and factors affecting the performance of ground level activity in patients with Stroke.
Methods	The study commenced after receiving ethical approval from the institutional ethics review committee. 30 Stroke patients were included in this study according to inclusion and exclusion criteria. Consent and Demographic data were obtained from the participants. The patients were assessed for tone, range of motion, strength, and balance through the Modified Ashworth scale, Goniometer, Commander muscle tester and Berg balance scale as these components contribute directly to Ground level activity. These variables were then correlated with Ground level activity. MGM Ground Level Activity Exposure Questionnaire (MGM GLAEQ) was used to quantify Ground level activity post Stroke.
Results	For statistical analysis, Wilcoxon signed-rank test was used to evaluate the quantity of GLA pre and post Stroke. There was a significant reduction in Total GLA (Pre- $29.57 \pm 29.86$ , Post- $28.56 \pm 22.12$ , $p < 0.00$ ). Squatting (Pre- $10.84 \pm 19.82$ , Post- $5.16 \pm 6.08$ , $p < 0.00$ ), Cross leg sitting (Pre- $15.28 \pm 20.31$ , Post- $21.04 \pm 16.6$ , $p < 0.00$ ), Kneeling (Pre- $0.67 \pm 2.82$ , Post- $0.83 \pm 2.65$ , $p < 0.1$ ), Combination posture (Pre- $2.78 \pm 10$ , Post- $1.16 \pm 4.48$ , $p < 0.3$ ). Pearson correlation coefficient test showed a positive relation with weak to moderate strength between the variables and Ground level activity.



Conclusion	The ground level activities are reduced post Stroke, which has an effect on an individual's level of independence and quality of life. The other variables showed a positive relation, which guide us to initiate a holistic approach in treating the patients where improving their level of independence can be evaluated by the activities they used to perform previously. In India, understanding the importance and the factors related to the performance of ground level activities can guide clinicians to target this area to improve functional ability.
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**Fig 1: Lower Extremity Tone Assessment**

muscle



**Fig 2: Lower Extremity Range of Motion Assessment**

Joint

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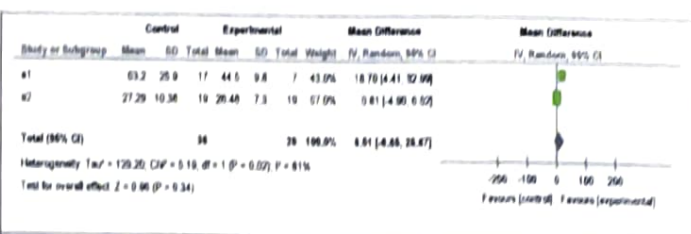
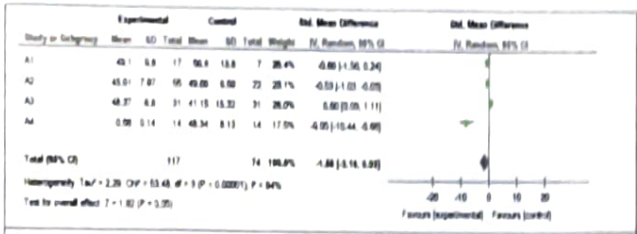
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**MPT(Neuro-Physiotherapy) Project Report Summary**

Project title	Effect of Tele-rehabilitation on people with Parkinson's Disease – A Systematic Review and Meta-analysis.
Name and signature of Guide	Dr. Amrita Ghosh (PT) 
Name and signature of candidate/s	Miss. Niyati Desai 
Duration of project	1 Year
Approval date	12/7/2021
Submission date	05/12/2022
<b>Project Summary</b>	
Purpose	To review on the effects of telerehabilitation on people with Parkinson's Disease. To perform Meta-analysis on the effects of telerehabilitation on people with Parkinson's Disease.
Objectives	To review on the effects of telerehabilitation on people with Parkinson's Disease. To perform Meta-analysis on the effects of telerehabilitation on people with Parkinson's Disease.
Methods	The study was started after receiving an ethical approval from MGM Institute of Health Sciences. The review was further conducted while appraising the available literature according to PEDRo, risk of bias was assessed using COCHRANE risk of bias and reported according to PRISMA guidelines, 2020 Meta-analysis was done using RevMan 5.4.
Results	The search identified 847 articles 235 were from PubMed, 136 from COCHRANE Library, 476 from Science Direct, while 41 papers were identified by an additional manual search. 11 articles met the study criteria and were included in the final analysis. These 11 articles, involving 168 patients affected by PD, consisted of 8 RCTs, 6 clinical trials. Gait and balance- Both RCTs compared postural stability and balance improvements of an experimental TR group with an inpatient rehabilitation group. The total random effects MD obtained -13.07 (95% -39.73 to 13.59). Since line 0 is crossed, the MD becomes non conclusive. <u>Upper Limb Dexterity</u> Only one clinical trial focused on dexterity of the upper limb (UL). The total random effects SMD obtained -1.56 (95% -3.16 to 0.03). Since line 0 is crossed, the SMD becomes non conclusive. <u>MDS-UPDRS</u> studies focused on motor function from which only two studies included MDS-UPDRS Although some studies have shown that Mean difference has crossed 0 i.e., the

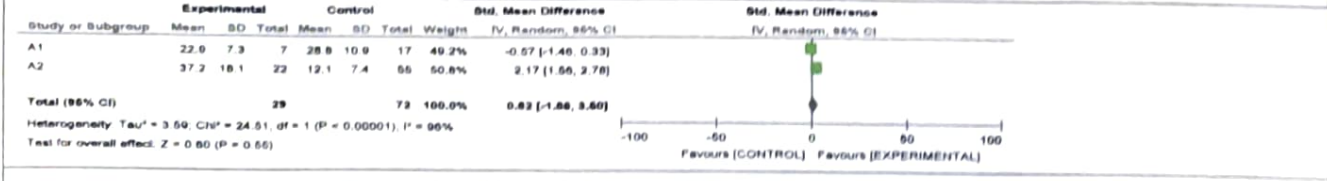


	line of no effect, with 95% CI going below 0 (& negative also) however the total random effects MD obtained was 9.58 (95% -20.80 to 39.96).
Conclusion	This systematic review suggests that Tele-rehabilitation in PD patients is indicated in the early stages of the disease and in particular in adult patients with preserved cognitive status.



Forest plot of Standard Mean Difference on gait and balance.

Forest plot of Standard Mean Difference on Upper Limb Dexterity.



Forest plot of Standard Mean Difference on Motor Symptoms

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**MPT (Cardiorespiratory-Physiotherapy) Project Report Summary**

Project title	Association between Computed Tomography scan findings, Lung function and Functional capacity in patients with COVID19
Name and signature of Guide	Dr. Bela Agarwal
Name and signature of candidate/s	Miss. Nikita Jagtap
Duration of project	1 Year
Approval date	12/7/2021 (MGM/DCH/IEC/62/2021)
Submission date	05/12/2022
<b>Project Summary</b>	
Purpose	The objectives of the study were to evaluate long term effects of COVID19 on lung function and functional capacity and to study associations between CT severity score, lung function and functional capacity in patients with COVID19
Objective	Primary objective was to evaluate lung function and functional capacity in patients with COVID19 disease and secondary was to study the association to study associations between CT severity score on CT scan, lung function and functional capacity in patients with COVID19 disease.
Methods	Fifty-three patients with diagnosed mild-moderate COVID 19 disease with CT scan performed at time of diagnosis were included in the study patients who are positive on RT PCR test and with CT severity score on CT scan were included. Cardiopulmonary endurance, (6-minute walk test), muscle strength (30 sec chair stand test), balance (single leg stance test), gait speed (10-meter walk test), pulmonary function test and Health-related Quality of life (SF12) were evaluated 6 months following COVID19 infection. Association between CT severity score, lung function and functional tests were evaluated using Pearson's correlation test.
Results	Significant associations were observed between CT severity score and 6-minute walk test ( $p=0.00$ ), 30 seconds chair stand test ( $p=0.00$ ), single leg stance test ( $p=0.00$ ) and Quality of life( $p=0.00$ ) There was no significant association seen between lung function and functional capacity in patients with COVID19 after 6 months of hospital discharge.



Conclusion	Cardiorespiratory endurance, leg muscle strength and Quality of life of the individual with COVID19 infection are impaired even 6 months after COVID19 infection. Cardiorespiratory endurance, leg muscle strength and Quality of life are maximally associated with severity of CT scan findings suggesting the need for long term rehabilitation programs to improve comprehensive functioning and quality of life.
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Figure 1: Patient performing 30 second chair stand test



Figure 2: Patient performing Single leg stance test



Figure 3: Patient performing Pulmonary function test

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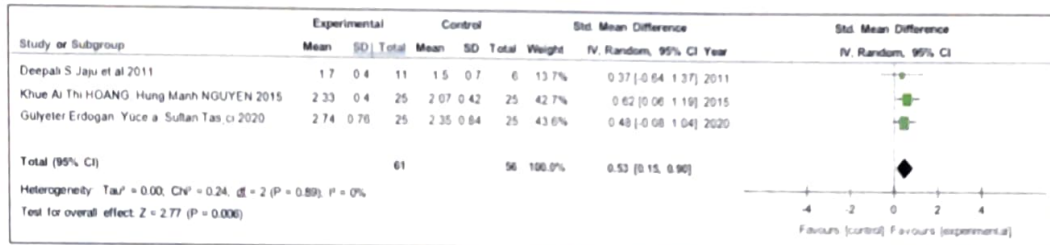
**MPT (Cardiorespiratory Physiotherapy) Project Report Summary**

Project Title	Exploring Effects Of Pranayam On Lung Functions In Chronic Respiratory Condition- A Systematic Review And Meta-Analysis
Name and signature of Guide	Dr. Bela Agarwal
Name and signature of candidate/s	Miss. Devika Bhosale
Duration of project	1 Year
Approval date	12/7/2021 (MGM/DCH/IEC/63/2021)
Submission date	05/12/2022
<b>Project Summary</b>	
Purpose	Exploring Effects Of Pranayam On Lung Functions In Chronic Respiratory Condition- A Systematic Review And Meta-Analysis
Objective	Primary objective of the study was to review the effects of Pranayama on lung function in patients with chronic respiratory disease and to perform a meta-analysis on the effects of Pranayama on lung function in patients with chronic respiratory disease.
Methods	Studies were identified by searching the databases PubMed, CINHAL, Cochrane Library, Science Direct and Google Scholar. Keywords used were 'Pranayama', 'Yogic breathing exercises', 'Lung functions', 'respiratory conditions', 'Annulom-Villom', 'Bhramari', 'Bhastrika', 'Onkar', 'Surya-Bhedna' and 'Kapalbhati'. Studies exploring effects of Pranayama on lung function in patients with chronic respiratory diseases were included in the study and studies exploring effects of pranayama and other yoga techniques on conditions other than chronic respiratory diseases were excluded from the study. Data were extracted from each study-Demographic details, details of pranayamaintervention and outcome measures like pulmonary function test, peak expiratory flow rate(PEFR), maximum inspiratory pressure (MIP) and maximum expiratory pressure (MEP). PEDro scale was used to assess the risk of bias assessment. Meta-analysis was carried out for outcome variables Forced Expiratory Volume in 1 Second (FEV1), Forced vital capacity FVC, Ratio Of Forced Expiratory Volume In 1 Second To Forced Vital Capacity (FEV1/FVC) and Peak Expiratory Flow Rate (PEFR).

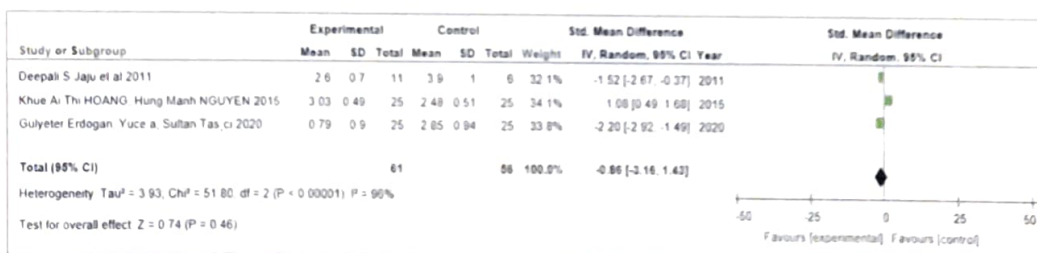


Results	<p>Total 13 studies with total 746 patients were included in the systematic review and meta-analysis. Of the 13 articles included in this systematic review, 8 of them scored 6 to 8 (good) on the PEDro scale. Two articles scored 9 to 10 (Excellent). Pranayama sessions included pranayama techniques such as: Surya Bhedana, Nadi Shuddi, Bhramari, Surya Nadi Pranayama, Kapal Bhati, Bhastrika, and Onkar /Om Chanting. Outcome measures such as Forced Expiratory Volume in 1 Second (FEV1), Forced vital capacity FVC, Ratio Of Forced Expiratory Volume In 1 Second To Forced Vital Capacity (FEV1/FVC) and Peak Expiratory Flow Rate (PEFR), Maximum Inspiratory Pressure (MIP), Maximum Expiratory Pressure (MEP), were used to assess the lung function in patients with chronic lung disease. Out of all the outcome measures, FEV1 and PEFR showed significant effect size in favor of the experimental group. The total random effects Mean Difference of 0.28 (95% CI 0.09-0.47) was observed for FEV1. Similarly, the total random effects Mean Difference of -0.32.16 (95% CI -46.05- 18.27) was observed in PEFR in favor of the experimental group. Results of meta-analysis for improvement in FVC was inconclusive.</p>
Conclusion	<p>A long term intervention of Pranayama for 12 weeks is beneficial in improving expiratory and inspiratory lung function and respiratory muscle activity. Pranayama can be included in pulmonary rehabilitation programs along with usual pharmacological treatment to improve lung function of patients with CRD.</p>

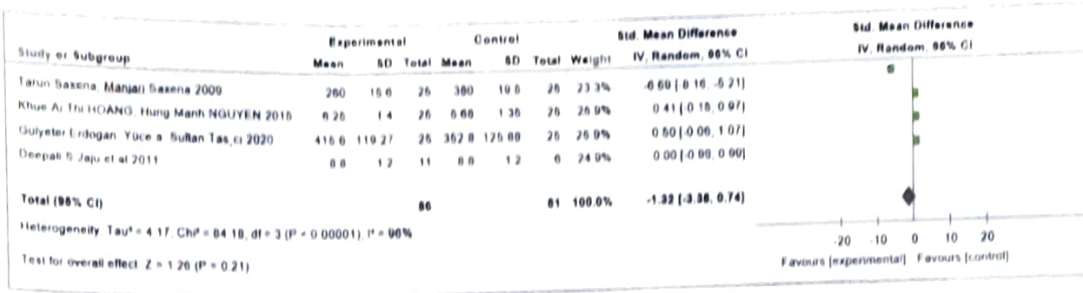
**Table 1- Forest plot for FEV1 Standard Mean Deviation Random Effect**



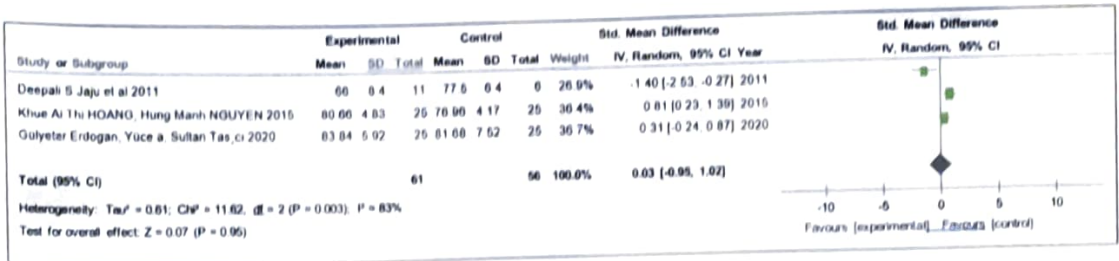
**Table 2- Forest plot for FVC Standard Mean Deviation Random Effect**



**Table 3- Forest plot for PEFR Standard Mean Deviation Random Effect**



**Table 4- Forest plot for FEV1/FVC Standard Mean Deviation Random Effect**



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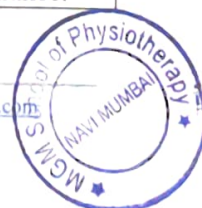




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**MPT (Sports Physiotherapy) Project Report Summary**

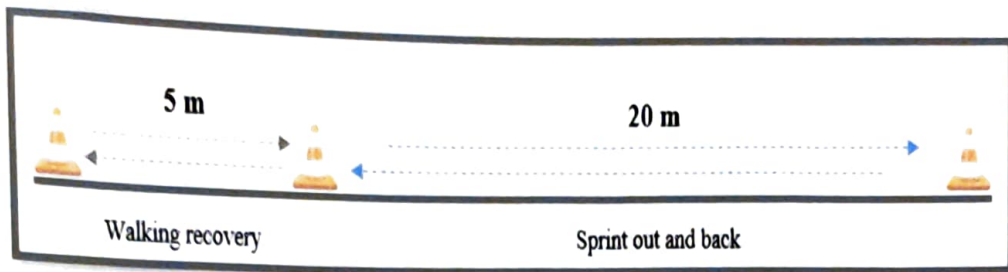
Project title	Kinanthropometric and Physical Fitness Profiles of Sub-elite Kho-Kho Players.
Name and signature of Guide	Dr. Triveni Shetty
Name and signature of candidate/s	Miss. Prerna Khosla
Duration of project	1 Year
Approval date	12/7/2021
Submission date	05/12/2022
<b>Project Summary</b>	
Purpose	Explore the kinanthropometric and physical fitness profile of sub-elite Kho-Kho players.
Objective	Establish the association between kinanthropometric and physical fitness variables of the sub-elite Kho-Kho players. Compare the physical fitness variables among university, district, state and national level players.  Establish the reaction time of sub-elite Kho-Kho chasers.  Explore the injury profile of sub-elite Kho-Kho players.
Methods	Forty-seven healthy sub-elite Kho-Kho players were recruited for this study who had at least three years of competition experience. The participants were District State/ National level players between the ages of 17 to 24 (senior players). Kinanthropometric data including height, body weight, BMI, length measurements, body girths, skeletal diameters, skin fold measurements, was gathered using appropriate tools. The videos for Reaction Time were captured using VICON 3D motion analysis system. Chasing technique of getting up from a squatting position was performed by the player in a simulated game in the laboratory. Reaction Time of the player was determined by the appropriate frames in which the movement occurred. The Pre-Motor Reaction Time was recorded between the point of "Kho" till the initiation of first step. Motor Reaction time was recorded between the initiation of step till the player sets his foot on the ground at foot flat sub-phase of the stance phase. Total Reaction Time was the sum of the Pre-Motor and Motor Reaction Times. Following this, the participants were instructed about the procedure of performing each physical fitness test and they were made to perform tests for flexibility, agility, muscle endurance, cardio-respiratory endurance, power, speed and balance.



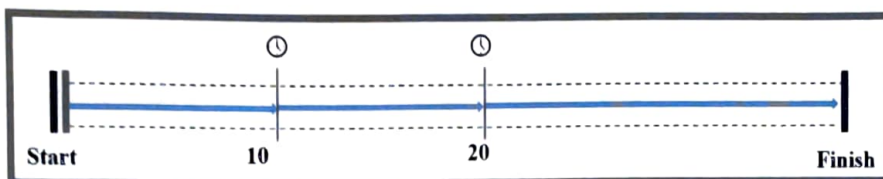


Results	<p>The national level players were older (<math>20 \pm 2.6</math>) with a greater number of training years (<math>10 \pm 2.6</math>) than the other groups. BMI was similar between state (<math>20.50 \pm 3.71</math>) and national (<math>20.69 \pm 1.94</math>) level players. National level Kho-Kho players had greater years of experience (<math>10 \pm 2.63</math>), more training hours (<math>2.93 \pm 0.44</math>) and more training sessions (<math>5.87 \pm 0.34</math>) than state and district level players. Knee was the most commonly injured part of the body (30%) followed by shoulder (14%) and ankle (11%) among these players.</p> <p>There was a significant difference across the three groups in leg length measurements, the highest being National level players (<math>90.00 \pm 5.08</math>). Calf girth measurements were similar for State (<math>33.00 \pm 4.55</math>) and National level players (<math>32.59 \pm 3.18</math>). Thigh girth measurements were higher for District level players (<math>43.47 \pm 4.26</math>). Hip girth was highest for national level players (<math>82.69 \pm 13.98</math>). Knee (<math>11.91 \pm 0.70</math>) and ankle (<math>9.41 \pm 1.39</math>) skeletal diameters were the highest in district level players</p> <p>The data statistically revealed a significant difference in lower extremity muscle endurance, lower extremity power, speed, agility and cardio-respiratory endurance (<math>p &lt; 0.01</math>) between District, State and National level players. The national level players outperformed state and district level players in all of these fitness tests except the agility test. Agility test was best performed by district followed by state and national level players.</p> <p>Significant difference was found between lower extremity muscle endurance of national and district level players (<math>p &lt; 0.01</math>), state and district level players (<math>p &lt; 0.01</math>); between lower extremity power of national and district level players (<math>p &lt; 0.01</math>), state and district level players (<math>p &lt; 0.01</math>); between speed of national and state level players (<math>p &lt; 0.01</math>), national and district level players (<math>p &lt; 0.01</math>); between agility of national and district level players (<math>p &lt; 0.01</math>); between yo-yo intermittent recovery test of national and district level players (<math>p &lt; 0.01</math>), state and district level players (<math>p &lt; 0.01</math>).</p> <p>Lower extremity and trunk muscle strength demonstrated a positive correlation with height (<math>r = .477</math>; <math>p &lt; 0.01</math>), weight (<math>r = .515</math>; <math>p &lt; 0.01</math>) and thigh girth (<math>r = .388</math>; <math>p &lt; 0.01</math>), and hip girth (<math>r = .380</math>; <math>p &lt; 0.01</math>). Agility demonstrated a negative correlation with BMI (<math>r = -.382</math>; <math>p &lt; 0.01</math>), but a positive correlation with skin fold of thigh (<math>r = .408</math>; <math>p &lt; 0.01</math>). Lower extremity power demonstrated a positive correlation with leg length (<math>r = .415</math>; <math>p &lt; 0.01</math>). The total reaction time required by a chaser to react to the "kho" was <math>6.24 \pm 1.24</math> seconds.</p>
Conclusion	<p>The differences in Physical Fitness Variables across District, State and National Level players could be due to their age, kinanthropometric characteristics and also due to the different skills and movement patterns that these players perform during training or competition. The findings of this study can help coaches and trainers to create fitness testing protocols and training regimes for senior Kho-Kho players.</p>





**Fig 1**  
Yo-Yo Intermittent Recovery Test



**Fig 2**  
Forty yard Dash Test

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**MPT (Sports Physiotherapy) Project Report Summary**

Project title	Kinanthropometric and physical fitness profiles of sub-elite kabaddi players
Name and signature of Guide	Dr Triveni Shetty
Name and signature of candidate/s	Miss. Heli Savla
Duration of project	1 Year
Approval date	12/7/2021
Submission date	05/12/2022
<b>Project Summary</b>	
Purpose	To explore the kinanthropometric and physical fitness profile of sub-elite Kabaddi players.
Objective	To compare the Physical Fitness profile in Kabaddi players (University/ District/ State/ National). To provide the normative values for the Kinanthropometry and Physical fitness variables for Kabaddi players. To know the common injuries in Kabaddi players.
Methods	Hundred sub-elite Kabaddi players participated in the study, age grouped 17-25 years. Players were distinguished as per the level of game. The Kinanthropometric variables including Height, Body Weight, BMI, Length Measurements, Body Girths, Skeletal Diameters, Skin Fold Measurements and Physical Fitness variables including test assessing components of Flexibility, Muscular strength and endurance, Cardiovascular endurance, Agility and Lower quadrant balance were recorded.
Results	Height ( $r < 0.05$ ), Leg length ( $r < 0.4$ ), Upper leg length ( $r < 0.4$ ), knee diameter ( $r < 0.3$ ), and ankle diameter ( $r < 0.4$ ) all have a positive correlation with the Back leg chest Dynamometer. Upper leg length ( $r < 0.4$ ) and ankle diameter ( $r < 0.3$ ) are kinanthropometric variables that have a negative correlation with T-test. Height ( $r < 0.3$ ), leg length ( $r < 0.3$ ), upper leg length ( $r < 0.3$ ), and hip girth ( $r < 0.3$ ) are the kinanthropometric factors that have a positive correlation with the Vertical jump test.
Conclusion	The results of this study demonstrated the importance of the agility, power and strength of lower extremity and strength on the kinanthropometric variables in Kabaddi players. It will help the coaches and other authors to develop a good training protocol by quantifying and evaluating players anthropometric characteristics and physical fitness performance of the players. It will further help in the recruitment process and monitor the progress of the Kabaddi players.



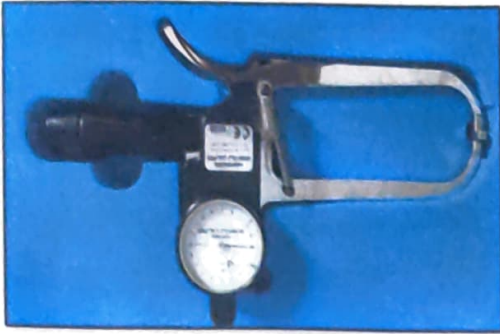


Figure 1: Harpendon skinfold caliper



Figure 2: Modified sit and reach

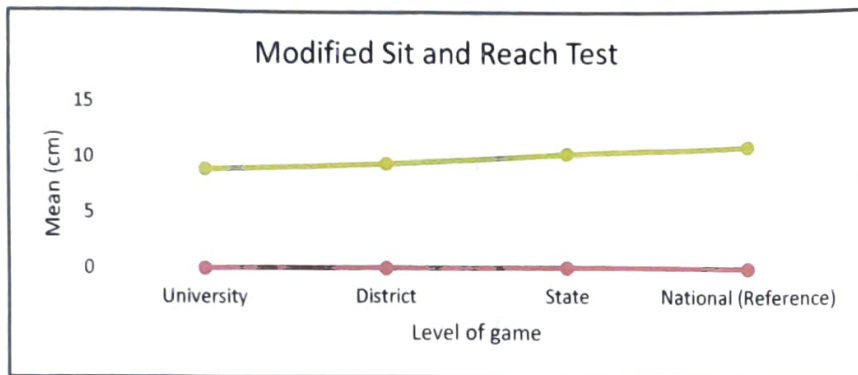


Figure 3. Linear trends of Modified sit and reach test

Heli Savla  
Co-investigator

Dr. Triveni Shetty  
Guide



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**BPT/Internship Project Report Summary**

Project title	Biomechanics of hip-hop among injured and healthy dancers using 2D analysis
Name and signature of Guide	Dr. Hiranmayee Bagwe (PT)
Name and signature of candidate/s	Gunjan Tejwani Riddhi Shinde
Duration of project	8 months
Approval date	29 <sup>th</sup> April 2022
Submission date	30 <sup>th</sup> November 2022

**Project Summary**

Purpose	To Study and analyze the biomechanics of hip-hop dance styles using 2D motion analysis
Objectives	<ol style="list-style-type: none"><li>1. To analyze dance movements in old school and new school hip hop dance styles using 2D motion analysis.</li><li>2. To identify contextual risk factors leading to musculoskeletal injuries among hip-hop dancers.</li><li>3. To compare the incidence of injury among healthy dancers and previously injured hip-hop dancers</li></ol>
Methods	A purposive sample of 25 participants was selected based on inclusion criteria. After obtaining informed consent from 25 participants along with their demographic data. Participants were divided in two groups Group A consisted of previously injured hip-hop dancers and group B consisted of healthy hip-hop dancers. Outcome measures such as physical fitness assessment and Functional Movement Screen were recorded. After which reflective tape was placed on bony landmarks and the participant was asked to perform two set dance routines an old-school hip-hop dance form which included popping and locking, and a new-school hip-hop dance form, which was then recorded using a smartphone in a sagittal view. The videos were then analyzed using kinovea software version 0.9.5. Statistical analysis was done with SPSS version 24 (IBM SPSS 28 Statistics Windows, Armonk, NY: IBM Corp) and Microsoft Excel 2013.
Results	At <b>Hip</b> Joint – Peak angles at Hip Flexion ranged from 76-100 degrees for Injured Dancers and 51-75 degrees for non-injured dancers Peak angles for Hip Extension Ranged from 0-25 degrees in Injured and Non injured dancers. At Knee Joint-Peak angles for Knee Flexion Ranged from 51-75 degrees in Injured Dancers and 126-150 Degrees in Non-Injured Dancers.



At Ankle Joint – Peak angles for Ankle Dorsiflexion Ranged from 51-75 degrees in Injured Dancers and Non-Injured Dancers Peak angles for Ankle Plantarflexion Ranged From 51-75 Degrees in Injured Dancers and Non-Injured Dancers.  
 In this study, 15 new school dance sequences were recorded Mean of Hip Flexion Ranged from  $44.5 \pm 36.7$  to Knee Flexion to  $80.7 \pm 50.8$ , Ankle Dorsiflexion to  $62.2 \pm 15$ , Ankle Plantarflexion  $62.1 \pm 14.7$  and 12 old dance sequences were recorded Mean of Hip Flexion Ranged from  $67.6 \pm 28.1$  Hip Extension to  $10.1 \pm 6.4$ , Knee Flexion to  $106 \pm 48.4$  Ankle Dorsiflexion to  $60.5 \pm 16.8$ , Ankle Plantarflexion to  $64.5 \pm 16.4$

**Conclusion**

This study analyzed dance movements in old-school and new-school hip-hop dance styles using 2D motion analysis. The excessive joint angles measured in this study may provide an explanation for higher lower-extremity injury rates reported by dancers. These results can assist the healthcare practitioner in understanding the functional requirements of hip-hop dancers and the needs of the dancer during the rehabilitation phase following any musculoskeletal injury. As dance-related injuries seem to be of major concern, researchers may consider conducting a further investigation by ruling out the confounding factors and also by carrying out screening tests, preventive programs, and training regimes which can lead to a reduction in dance-related injuries, and by involving other healthcare workers.

**Photographs:**



Participant photographed performing new school hip hop with reflective tape placed on bony landmarks



Video analysis done on Kinovea

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 Gunjan Tejwani

*Shinde*  
 Riddhi Shinde

Guide: Dr. Hiranmayee Bagwe (PT) *Bagwe*

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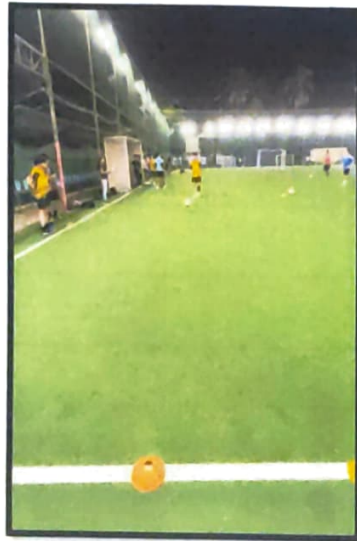
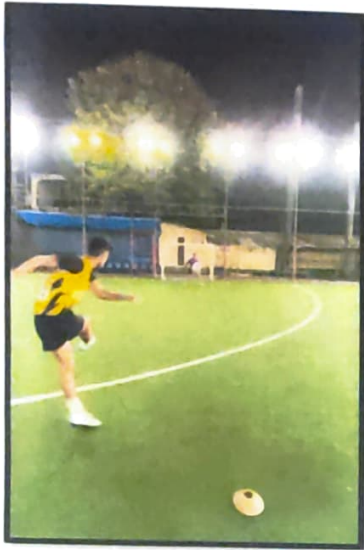
#### BPT/Internship Project Report Summary

Project title	Exploration of Physical Fitness Attributes, Kinanthropometry and Skill Assessment in Indian sub-elite football players
Name and signature of Guide	Dr. Triveni Shetty (PT)
Name and signature of candidate/s	Prasenjeet Kale Shweta Zende
Duration of project	8 months
Approval date	14 <sup>th</sup> March, 2022
Submission date	30 <sup>th</sup> November, 2022
<b>Project Summary</b>	
Purpose	To explore physical attributes along with anthropometry and on field skills in Indian sub elite football players.
Objectives	Evaluate strength, endurance, power, speed, balance, agility in sub elite football players.
	Assess height, weight, BMI, hip – waist ratio, limb length, limb girth, skin fold thickness in sub elite football players.
	Assess the on-field skills of sub elite football players.
	To find the correlation between anthropometric measures and physical fitness, Football skills.
Methods	A cross sectional study was conducted on 27 football players from university level as well as district level. The players were recruited from the age group 17-30 years and their test was scheduled. Following this, their kin anthropometric assessment was done, followed by testing of physical fitness attributes and skill assessment using FMARC. Comparison between university and district level players was done. Additionally, correlation between anthropometry and physical fitness traits, skills was done.



Results	Players from universities and those from districts were contrasted in terms of performance. In the tests of star excursion balance there was a significant difference between players at the University level and those at the district level ( $p < 0.05$ ). Juggling, dribbling speed, long passing, short passing, shooting the dead ball, shooting from a pass and heading are all featured in FMARC. In the tests of juggling (foot), dribbling speed, short passing, there was a significant difference between players at the University level and those at the district level ( $p < 0.05$ ). There was no correlation found in university and district level players between anthropometry and physical fitness, skills.
Conclusion	The present study concluded that district level players showed better physical fitness and performance traits in terms of balance, juggling, dribbling speed, short passing and heading than the university level players. Additionally, there was a weak correlation between anthropometry and physical fitness, FMARC.

Photographs:



Legend: —

*P.K.*

Co-investigators: Prasenjeet V Kale

*Shweta*

Shweta G Zende

*Triveni*

Guide: Dr. Triveni Shetty (PT)



*Mayee*

Internship Coordinator

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