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Original Research Paper

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EFFECT OF PAIN CATASTROPHISM AND KINESIOPHOBIA ON THE OBJECTIVE FUNCTION OF RECREATIONAL RUNNERS WITH PATELLOFEMORAL PAIN (PFP)

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KEYWORDS :

INTRODUCTION

Patellofemoral pain (PFP) is a common musculoskeletal condition characterized by diffuse anterior knee pain, typically aggravated by activities that load the patellofemoral joint such as running, squatting, stair climbing, and prolonged sitting. Diffuse anterior knee discomfort is the hallmark of patellofemoral pain (PFP), a common musculoskeletal disorder that is usually made worse by activities that put strain on the patellofemoral joint, such as running, crouching, climbing stairs, and extended sitting. It is commonly seen in those who are physically active, especially teenagers and recreational runners. Muscle weakening, biomechanical irregularities, overuse, and poor lower limb alignment are some of the contributing aspects to this complex disorder. PFP may cause limits in day-to-day activities, diminished sports performance, and decreased engagement in physical activity if treatment is not received. [1]

Running has been linked to a number of health advantages, such as increased metabolic function, better cardiovascular endurance, weight control, and a lower risk of chronic conditions like type 2 diabetes and hypertension. Additionally, it has a major impact on bone and muscular strength, which enhances overall physical performance and lowers the risk of injury. Additionally, jogging for fun can lead to better sleep and a better quality of life in general. [2]

In addition to physical health, running has also been shown to positively influence mental well-being by reducing symptoms of stress, anxiety, and depression, thereby improving overall quality of life. The repetitive nature of running, combined with factors such as training errors, improper biomechanics, and inadequate recovery, contributes significantly to injury development. Among these, injuries to the lower extremities are the most commonly reported, accounting for the majority of cases due to the continuous load-bearing demands placed on the hips, knees, legs, and feet during running activities[3].

In recent years, there has been a significant increase in the number of recreational runners, driven by growing awareness of health and fitness as well as participation in community events such as marathons and fitness programs. However, this rise in participation has also led to a parallel increase in running-related musculoskeletal injuries.[4]

Studies suggest that a substantial proportion of recreational runner's experience at least one injury per year, with the lower extremities being the most commonly affected regions due to repetitive loading and overuse. Most running-related injuries are classified as overuse injuries rather than acute traumatic events. Overuse injuries occur as a result of cumulative micro trauma to tissues without sufficient time for recovery, leading to conditions such as patellofemoral pain, iliotibial band syndrome, and stress fractures. These injuries often develop gradually and can significantly impair functional performance and participation in running if not addressed appropriately.[5]

Due to its accessibility, affordability, and ease of use, recreational running is one of the most popular physical activities worldwide. It is a practical option for people of all ages and fitness levels because it requires little equipment and can be done in a variety of settings. Regular jogging improves general physical fitness and muscular endurance in addition to cardiovascular health. Additionally, it improves mental health by lowering stress, anxiety, and depressive symptoms. Additionally, recreational running fosters long-term physical activity involvement and the formation of healthy living patterns. [6]

Kinesiophobia is defined as an excessive, irrational, and debilitating fear of physical movement and activity resulting from a feeling of vulnerability to pain or re-injury. It is commonly observed in individuals with musculoskeletal conditions, where the anticipation of pain leads to heightened fear responses associated with movement.

Objectives of the Study

- To find the influence of pain catastrophism on the objective function in recreational runners with Patellofemoral pain.
- To find the influence of Kinesio phobia on the objective function in recreational runners with Patellofemoral pain

METHODOLOGY

A simple random sampling method was used categorize participants into 2 groups considering 29 in each group. Ethical clearance was obtained from the Institutional Ethics Committee prior to the commencement of the study. (Annexure I).

MATERIALS AND METHOD

Study Design: Comparative Observational Study Design
Study Subjects: Recreational runners
Study Setting and Source of Data: Florence College Of Physiotherapy
Study Duration: 6 months
Sampling Method- Simple Random Sampling

Sample Size Calculation

From the previous research study titled "Smith BE, Selfe J, Thacker D, Hendrick P, Bateman M, Moffatt F, et al. Incidence and Prevalence of Patellofemoral pain: a Systematic Review and meta-analysis. Screen HR, editor. PLoS One. 2018 Jan 11;13(1):e0190892".

So, it is approximately 42 participants required to estimate the proportion

Inclusion Criteria

- Recreational runners having pain catastrophism and kinesiophobia

- AGE 18-45 years, Both male and females
- Anterior Leg pain when performing at least two of the following activities: sitting for prolonged time, squatting, kneeling, running, climbing and descending stairs, jumping and landing

Exclusion Criteria

- Other knee disorder or past knee dysfunction
- History of lower limb surgery.
- Patellar subluxation, meniscal injury, or ligament instability.

Procedure

Participants who fulfilled the inclusion criteria were recruited for the study after obtaining informed consent. Demographic details including age, gender, height, weight, body mass index (BMI), and duration of symptoms were recorded prior to the assessment procedure. Based on the assessment criteria, participants were categorized into two groups: Group A and Group B. All evaluations were conducted in a standardized environment to ensure consistency and minimize measurement bias.

The Tampa Scale of Kinesiophobia (TSK-11) was used to evaluate fear of movement and re-injury during physical activities.

Functional performance and lower limb control were assessed using the Forward Step Down Test (FSDT). Participants were instructed to step down from a standardized step in a controlled manner while maintaining balance and alignment. associated with patellofemoral pain.

Dynamic balance was evaluated using the Modified Star Excursion Balance Test (mSEBT), which measured reach distances in the anterior, posteromedial, and posterolateral directions.

DATA ANALYSIS & RESULTS

The collected data were tabulated and analyzed using both descriptive and inferential statistics. All the parameters were assessed using statistical package for social science (SPSS) version 24, with a significance level of p value less than 0.05 and a 95% confidence interval set for all analysis.

Table – 3- Comparison of Modified Star Excursion Test Score Between Group - A and Group – B

Test	Group A		Group B		t - test	Significance
	Mean	S.D	Mean	S.D		
MSEBT	87.31	6.74	85.24	5.07	1.32	.192*

The above table reveals the Mean, Standard Deviation (S.D), t-value and p-value between Group A and Group B. There is no statistically significant difference between Group A and Group at $P > 0.05$.

Table – 4-Comparison of Sit to Stand in 30 Seconds Score Between Group - A and Group - B

Test	Group A		Group B		t - test	Significance
	Mean	S.D	Mean	S.D		
STS30	20.20	4.27	21.27	2.51	-1.15	.251*

The above table reveals the Mean, Standard Deviation (S.D), t-value and p-value between Group A and Group B. There is no statistically significant difference between Group A and Group at $P > 0.05$.

Overall, the findings emphasize that psychological factors play a crucial role in patellofemoral pain. Elevated fear and catastrophizing may influence pain perception and functional limitations despite similar physical performance, highlighting the need for a biopsychosocial approach in rehabilitation.

DISCUSSION

This study was conducted to examine the influence of psychological factors, particularly kinesiophobia and pain catastrophizing, on pain perception and objective functional performance among recreational runners with patellofemoral pain (PFP). The findings of the study showed that individuals experiencing greater psychological distress reported higher pain levels and demonstrated poorer performance during certain functional activities, despite having similar baseline physical characteristics.

The demographic variables such as age and body mass index did not show any statistically significant differences between the groups ($p > 0.05$), indicating that both groups were relatively homogeneous. This improves the reliability of the findings, as the differences observed in psychological and functional outcomes are more likely related to psychological factors rather than demographic variations.

The current study concludes that in recreational runners with patellofemoral discomfort, kinesiophobia and pain catastrophizing have a substantial impact on pain perception and functional performance. Therefore, in order to achieve the best functional outcomes and long-term healing, psychological aspects must be addressed in addition to physical rehabilitation.

This study was conducted to evaluate the influence of kinesiophobia and pain catastrophizing on functional performance in recreational runners with patellofemoral pain. The findings showed that individuals with higher levels of fear of movement and negative pain-related thoughts experienced greater pain and poorer performance during functional activities involving the knee joint.

Interventions including graded exposure to movement, cognitive-behavioral strategies, and patient education may assist in reducing psychological distress and promoting a return to functional and sports-related activities with reduced pain and improved performance.

In conclusion, the present study demonstrates that kinesiophobia and pain catastrophizing significantly affect pain perception and functional performance in recreational runners with patellofemoral pain. Therefore, rehabilitation programs should address both physical and psychological factors to achieve better recovery and improved functional outcomes.

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