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THE LINK BETWEEN PHYSICAL ACTIVITY AND JOINT PAIN

Introduction

Chronic musculoskeletal pain is a highly prevalent global health issue and a leading cause of disability, diminished quality of life, and functional decline. Its impact extends to increased work absenteeism and greater healthcare utilization, contributing substantially to long-term health complications and socioeconomic burden despite modern treatment options [1].

Regular physical activity (PA) is a cornerstone in the prevention of many chronic diseases. Under healthy conditions, regular physical activity preserves joint integrity by enhancing cartilage nutrition, strengthening periarticular muscles, and optimizing biomechanics – a process termed the normal adaptive response. However, its impact on the musculoskeletal system, particularly on joints, can be twofold. On one hand, moderate exercise improves cartilage trophism and strengthens the muscular support system. On the other hand, high-intensity or inappropriate types of activity can lead to overuse and pain syndromes [1, 2]. Sedentary behavior is strongly linked to chronic musculoskeletal pain, increasing stiffness and reducing flexibility in tendons, muscles, and ligaments, thereby raising the incidence of musculoskeletal pathologies [3].

Conversely, randomized controlled trials demonstrate that exercise significantly reduces pain intensity and disease activity in individuals with arthritis and related conditions [4].

Recent prospective studies in older women indicate that higher physical activity levels are associated with significantly lower odds of developing joint stiffness or pain, suggesting a protective dose-response relationship that persists after adjusting for confounders [5].

Goal

The aim of this study was to assess the prevalence and characteristics of joint pain in groups with different levels and types of physical activity by analyzing survey data from respondents with varying activity levels, in order to assess differences in pain prevalence, characteristics, and potential clinical significance among the adult population.

Materials and methods of research

Study Design and Participants. A cross-sectional, anonymous online survey was conducted. A total of 264 individuals participated in the study. Inclusion criteria were age over 18 years and consent to participate.

Data Collection. The questionnaire included questions about age, gender, weight, PA level (number of days per week), type of PA (high-impact sports, low-impact, strength training, sedentary lifestyle), presence and location of joint pain, its intensity on a scale of 0 to 10, time of onset, as well as diagnoses and injuries.

Statistical Analysis. For the analysis, participants were divided into three groups: "High Active" (3–4 days/week, n=63), "Moderately Active" (1–2 days/week, n=81), and "Inactive" (0 days/week, n=47). The total number of respondents included in this analysis was 191 (n=191). Frequencies and percentages were calculated for categorical variables, and means and standard deviations for continuous variables.

All data were compiled and analyzed using Microsoft Excel. A quantitative analysis compared pain characteristics across different activity levels and types to assess associations between physical activity patterns and joint pain.

The results of the research and their discussion

Sample Characteristics. A total of 191 participants were included in the analysis. The overall prevalence of joint pain in the sample was 26.2% (n=50).

Pain Prevalence and Activity Level. The distribution of pain across activity groups is presented in Table 1. The highest proportion of participants with pain was observed in the moderately active group (34.0%), followed by the inactive group (32.0%). In the high-activity group, the proportion of participants with pain was the lowest at 20.6%.

Table 1 – Prevalence of joint pain according to physical activity level

Activity Level	Total (n)	Participants with pain (n)	Percentage with pain (%)
High (3–4 days/week)	63	13	20.6%
Moderate(1–2 days/week)	81	17	34.0%
Inactive(0 days/week)	47	15	32.0%
Total	191	50	26.2%

Pain Intensity. An opposite trend was observed: the mean pain intensity was higher among more active participants.

Table 2 – Average joint pain score according to physical activity level

Activity Level	n=191	Percentage (%)	Reporting Joint Pain (%)	Average Pain Score (0–10)
High Active (3–4 days/week)	52	27.23	28	6.8±2.1
Moderately Active (1–2 days/week)	88	46.07	46	4.5±1.8
Inactive (0 days/week)	51	26.70	26	5.2±2.5

Table 2 reveals that the high active group had a lower proportion of individuals with joint pain, they reported the highest average pain score (6.8±2.1 out of 10). In contrast, the moderately active group reported the lowest average pain score (4.5±1.80), despite having the highest number of individuals with pain. The inactive group demonstrated an intermediate average pain score (5.2±2.5). These findings suggest that among individuals who experience joint pain, those who are highly active tend to report more severe pain, while moderate activity may be associated with lower pain intensity.

Time of Pain Onset. For 42.0% (21 out of 50) of respondents, pain had begun within the last 3 months. Interestingly, the proportion of recent pain cases was highest in the inactive group (47.6%), which may suggest that pain was the reason for reducing activity. In the high and moderately active groups, this figure was 38.5% and 41.2%, respectively (Table 3).

Table 3 – Pain characteristics depending on activity level

Activity Level	Mean pain intensity (0–10)	Pain onset < 3 months (%)
High (3–4 days/week)	6.8 (SD 2.1)	38.5%
Moderate (1–2 days/week)	4.5 (SD 1.8)	41.2%
Inactive (0 days/week)	5.2 (SD 2.5)	47.6%
Total (mean/overall)	5.5	42.0%

This study revealed a complex relationship between physical activity and joint health. Our data do not support a simple linear relationship of “more activity equals less pain.” Instead, we observed a U-shaped prevalence curve: the lowest proportion of those experiencing pain was in the

high-activity group, but the highest was in the moderately active and inactive groups. This aligns with the hypothesis that a complete lack of activity is as harmful as insufficient, irregular activity ("weekend warriors"), which can create peak loads on an unprepared musculoskeletal system [3].

The fact that pain intensity was higher among the most active participants deserves special attention. It is possible these individuals experience pain related to acute or chronic overuse (tendinopathies, stress fractures) but continue to train. This underscores the need to educate amateur athletes on proper technique, rest, and the importance of timely diagnosis.

The high proportion of recently emerged pain among inactive participants suggests that in some cases, pain is the cause, rather than the consequence, of inactivity.

Limitations. The cross-sectional design does not allow for the establishment of cause-and-effect relationships. The data are based on self-report, which may lead to recall bias.

Conclusions

Joint pain is a common problem, affecting more than a quarter of physically active and inactive individuals. Our results show that maintaining *regular* (3-4 days per week) activity may be associated with a lower likelihood of developing pain compared to irregular activity or complete inactivity. However, the higher pain intensity in the active group requires further investigation to develop safe and effective exercise programs focused on long-term joint health. These findings highlight the need for personalized activity recommendations. Clinicians should assess both activity patterns and joint health to identify at-risk individuals and guide appropriate modifications, ultimately helping to prevent pain progression and improve long-term outcomes.

LITERATURE

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A CROSS-SECTIONAL STUDY ON THE PREDICTIVE ACCURACY OF TRADITIONAL BEDSIDE MALLAMPATI TEST VS AI MODELS ANALYSING FACIAL PHOTOGRAPHS

Introduction

The Mallampati test has long been a cornerstone of preoperative airway assessment, offering clinicians a quick, bedside method for predicting difficult intubation. However, its reliance on