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ORIGINAL ARTICLE

Age-related differences in motivations and barriers to physical activity – a cross-sectional analysis across the lifespan

Motywy i bariery w podejmowaniu aktywności fizycznej w różnych grupach wiekowych: analiza przekrojowa w perspektywie całego życia

HIGHLIGHTS

- Physical activity is essential for health and well-being across the lifespan, but a large share of the population fails to meet WHO recommendations.
- In younger age groups (15–34) aesthetic, social and ambition-related motives dominate.
- In adults aged 55+ health-related and functional motives (improving health, maintaining fitness) become primary drivers.
- Lack of time, fatigue and limited motivation are universal barriers across all ages, whereas health problems become a strong barrier in those aged 55+.
- Physical activity promotion should be age-tailored and combine digital and traditional outreach to include older adults underrepresented in online surveys.

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Streszczenie

Wprowadzenie: Aktywność fizyczna stanowi jeden z kluczowych elementów zdrowego stylu życia i jakości funkcjonowania człowieka w każdym etapie życia. Pomimo szerokiej dostępności wiedzy na temat jej prozdrowotnych efektów, poziom aktywności fizycznej w populacji pozostaje niewystarczający. Celem niniejszego artykułu jest analiza motywów podejmowania aktywności fizycznej oraz barier utrudniających jej regularne podejmowanie w różnych grupach wiekowych, a także ocena zależności pomiędzy poziomem aktywności a wybranymi czynnikami społeczno-demograficznymi.

Cel: Celem badania było poznanie motywów podejmowania aktywności fizycznej w różnych grupach wiekowych oraz identyfikacja barier utrudniających systematyczne podejmowanie wysiłku fizycznego. Szczególną uwagę zwrócono na zależności między częstotliwością aktywności fizycznej a cechami społeczno-demograficznymi, takimi jak wiek, miejsce zamieszkania, wykształcenie, status zawodowy oraz charakter wykonywanej pracy.

Materiał i metody: Badanie zostało przeprowadzone metodą sondażu diagnostycznego z wykorzystaniem autorskiego kwestionariusza ankiety internetowej (Google Forms). Ankieta była anonimowa i zawierała 16 pytań – metryczkowych, zamkniętych jedno- i wielokrotnego wyboru oraz pytań ze skalą ocen 1–5 dotyczących znaczenia motywów i barier. W analizie zastosowano statystykę opisową oraz testy nieparametryczne (Kruskala–Wallisa, U Manna–Whitneya, chi-kwadrat). Poziom istotności statystycznej przyjęto na $p < 0,05$.

Wyniki: W młodszych grupach wiekowych dominowały motywy estetyczne, ambicjonalne i społeczne, natomiast u osób starszych (55+) wyraźnie przeważały motywy zdrowotne i funkcjonalne. Najczęściej deklarowanymi barierami były brak czasu, zmęczenie zawodowe oraz problemy zdrowotne, których znaczenie istotnie wzrastało wraz z wiekiem ($H = 26,50$; $p < 0,001$).

Wnioski: Działania promujące aktywność fizyczną powinny być różnicowane w zależności od wieku oraz sytuacji życiowej. Istotne ograniczenie stanowi niedoreprezentowanie osób w wieku 65+, co sugeruje konieczność stosowania w przyszłych badaniach metod mieszanych (online + papier/wywiad bezpośredni), aby ograniczyć wpływ tzw. analfabetyzmu cyfrowego na reprezentatywność danych.

Słowa kluczowe: *aktywność fizyczna; motywacja do ćwiczeń; bariery aktywności; grupy wiekowe; zdrowie publiczne; teoria autodeterminacji; zdrowe starzenie się; nierówności zdrowotne.*

Abstract

Background: Physical activity is a key element of a healthy lifestyle and quality of human functioning at every stage of life. Despite the widespread availability of evidence on its health-promoting effects, the level of physical activity in the general population remains insufficient. The aim of this article is to analyze the motives for engaging in physical activity and the barriers that hinder its regular participation across age groups, and to assess the relationship between activity levels and selected socio-demographic factors.

Objective: The study's primary goal was to identify the dominant motivations for engaging in physical activity across different age groups and to recognize the barriers to systematic physical activity. Particular attention was paid to the relationship between the frequency of physical activity and socio-demographic characteristics, such as age, place of residence, education, professional status, and the nature of work performed.

Material and methods: The study was quantitative in nature and was conducted using a diagnostic survey method based on a proprietary online questionnaire (Google Forms). The anonymous survey consisted of 16 questions, including demographic items, closed-ended questions (single- and multiple-choice) and items rated on a 1–5 scale assessing motives and barriers. Distribution was both online (Facebook groups) and face-to-face (QR-code leaflets at the Nicolaus Copernicus University campus in Toruń). Data were analyzed using descriptive statistics and nonparametric tests (Kruskal–Wallis, Mann–Whitney U, chi-square); the significance level was set at $p < 0.05$.

Results: In younger groups, aesthetic, ambition-related and social motives dominated, whereas in older groups (55+) health-related and functional motives clearly prevailed. The most frequently cited barriers were lack of time, work-related

fatigue and health problems; the importance of health problems significantly increased with age ($H = 26.50$; $p < 0.001$). Lack of time, fatigue and limited motivation were universal across age groups.

Conclusions: Physical activity promotion should be tailored to age and life situation. The underrepresentation of adults aged 65+ highlights the need for mixed-method data collection (online + paper/in-person) in future studies to capture the perspective of seniors and limit the influence of digital illiteracy on data quality and representativeness.

Keywords: *physical activity; motivation to exercise; barriers to activity; age groups; public health; self-determination theory; healthy aging; health inequalities.*

1. Introduction

Physical activity plays a fundamental role in shaping an individual's physical, mental, and social health. Numerous epidemiological studies indicate that regular physical activity contributes to lowering the risk of lifestyle-related diseases such as cardiovascular disease, type 2 diabetes, and obesity, and has a beneficial effect on mental health by reducing stress, anxiety, and depressive symptoms. Moderate-intensity exercise is recommended for older adults to strengthen their immune system (Witkowska & Grabara, 2021).

According to current recommendations from the World Health Organization (WHO, 2020), adults aged 18 to 64 should engage in at least 150 to 300 minutes of moderate-intensity physical activity per week, or 75 to 150 minutes of vigorous-intensity physical activity per week. Despite these clear recommendations, a significant portion of the population fails to meet them. The phenomenon affects young people, adults, and seniors alike, although its determinants and consequences differ across life stages. In this context, analyzing the factors that motivate physical activity and the barriers that hinder regular participation is particularly important.

Motivation for physical activity can be health-related, aesthetic, social, recreational, or related to self-fulfillment. Its structure and impact vary with age, professional status, education level, and individual life circumstances. At the same time, many people point to significant limitations, such as lack of time, work-related fatigue, health problems, and limited access to sports facilities (Baxter et al., 2024; Dishman & DeBoer, 2023).

The aim of this article is to identify the dominant motives and barriers to physical activity in different age groups and to assess their significance in the context of health quality and lifestyle. The obtained results can provide a basis for designing effective physical activity promotion initiatives tailored to the needs of different social groups.

2. Material and methods

2.1. Study design and instrument

The study was quantitative in nature and was conducted using a diagnostic survey. The research tool was a proprietary electronic questionnaire developed in Google Forms, consisting of a personal-data section, items regarding the level and forms of physical activity, motivations for engaging in it, and barriers to regular physical activity. The questionnaire was anonymous and comprised 16 questions, including demographic items (gender, age, place of residence, education, professional status, type of work), closed-ended single- and multiple-choice questions concerning preferred forms of activity, frequency of participation and access to sports facilities, and items rated on a 1–5 scale assessing the importance of selected motives and barriers. One open-ended question allowed respondents to indicate factors that could encourage more frequent physical activity.

2.2. Sample and distribution

The survey was distributed both online (via Facebook groups) and face-to-face. Leaflets with a QR code leading to the survey were prepared and distributed to visitors at the Faculty of Biological and Veterinary Sciences of the Nicolaus Copernicus University and on the university campus in Toruń. Data collection continued until at least 30 responses were obtained in most age groups, allowing for preliminary comparative analysis between categories. The only exception was the group of respondents aged 65 and over, for which the minimum number of responses was not achieved (n = 5).

2.3. Statistical analysis

For categorical variables, response counts and percentages were calculated. For variables measured on an ordinal 1–5 rating scale (motives and barriers), arithmetic means and standard deviations were calculated, allowing for the establishment of a hierarchy of importance. Because of the ordinal nature of many variables and the absence of guaranteed normality of distribution, nonparametric tests were used for between-group comparisons. The Kruskal–Wallis test was applied to compare more than two groups for ordinal variables, and the Mann–Whitney U test was used when comparing two groups. The level of statistical significance was set at $p < 0.05$.

3. Results

Analysis of the structure of the study sample showed differences among respondents in terms of age, level of education, place of residence and professional status, which enabled inter-group comparisons. Table 1 presents the distribution of respondents by these characteristics.

Table 1. *Characteristics of the studied sample (N = 218).*

Variable	Categories	n	Count	% within variable
Gender	Female / Male	215	132 / 83	61.4 / 38.6
Age	15–24 / 25–34 / 35–44 / 45–54 / 55–64 / 65+	218	63 / 58 / 30 / 31 / 31 / 5	28.9 / 26.6 / 13.8 / 14.2 / 14.2 / 2.3
Place of residence	Rural / Small town / Small city / Medium city / Large city	216	34 / 17 / 20 / 110 / 35	15.7 / 7.9 / 9.3 / 50.9 / 16.2
Education	Primary / Vocational / Secondary / Higher	217	5 / 21 / 90 / 101	2.3 / 9.7 / 41.5 / 46.5
Employment status	Student / Full-time / Part-time / Unemployed / Retired	218	56 / 111 / 24 / 5 / 22	25.7 / 50.9 / 11.0 / 2.3 / 10.1
Type of work	Mental / Mixed / Physical	207	103 / 70 / 34	49.8 / 33.8 / 16.4
PA frequency	Daily / Several times a week / Rarely / Occasionally / None	218	25 / 89 / 32 / 53 / 19	11.5 / 40.8 / 14.7 / 24.3 / 8.7

Source: own research.

3.1. Motives for undertaking physical activity

The highest mean values in the younger groups were obtained for aesthetic and social motives, while in the older groups for health and functional motives. Table 2 presents the results of the Kruskal–Wallis test for individual motives across age groups.

Table 2. *Differences in motives for physical activity across age groups (Kruskal–Wallis test, α = 0.05).*

Motivation (1–5 scale)	H	p	Significance
Improving health	12.36	0.030	yes
Maintaining good physical condition	13.16	0.0219	yes
Relaxation and stress reduction	13.53	0.0189	yes
Desire for competition / ambition	15.08	0.0100	yes
Hobbies and passions	16.49	0.0056	yes
Weight loss	8.22	0.145	no
Improved mental well-being	5.44	0.364	no
Social integration	1.44	0.920	no

Source: own research.

Statistically significant differences ($p < 0.05$) between age groups were found for: improved health ($H = 12.36$; $p = 0.030$) – a motive particularly strong in the 55–64 and 65+ groups; maintaining good condition ($H = 13.16$; $p = 0.0219$); relaxation and stress reduction ($H = 13.53$; $p = 0.0189$) – more important in middle-aged groups (25–54); desire for competition and sports ambition ($H = 15.08$; $p = 0.0100$) – highest in the youngest respondents (15–34); and hobby and passion ($H = 16.49$; $p = 0.0056$). No significant differences were observed for weight loss, improved mental well-being, social integration, cooperation with a trainer, and family support – their means were similar between age groups ($p > 0.05$).

3.2. Barriers to undertaking physical activity

The most frequently reported barriers were lack of time, work-related fatigue and health problems. Table 3 summarizes the results of the Kruskal–Wallis test for individual barriers across age groups.

Table 3. *Differences in barriers to physical activity across age groups (Kruskal–Wallis test, α = 0.05).*

Barrier (1–5 scale)	H	p	Significance
Health problems	26.50	0.000071	yes
Lack of support from loved ones	16.35	0.0059	yes
Lack of time	6.13	0.294	no
Lack of motivation	1.96	0.854	no
Financial constraints	2.65	0.754	no
Fatigue	5.67	0.340	no
Lack of suitable places or sports facilities	5.90	0.316	no

Source: own research.

Significant differences between age groups were observed for: health problems ($H = 26.50$; $p < 0.001$) – the importance of this barrier increased markedly with age, being weak in younger respondents and strong in those aged 55+; and lack of support from loved ones ($H = 16.35$; $p = 0.0059$). No significant differences were found for lack of time, lack of motivation, financial constraints, fatigue and lack of space/infrastructure – these barriers were of similar importance across all age groups.

4. Discussion

The obtained results confirm the existence of differences in motivations for physical activity depending on age, which is supported by the literature. The increasing importance of health-related motivations in older age groups indicates that physical activity is perceived as a component of healthy aging, while in younger groups aesthetic and ambition-related motives predominate (Palombi et al., 2025).

The analysis revealed a statistically significant relationship between age and health motivation (Kruskal–Wallis test: $H = 12.36$; $p = 0.030$), with improved health being a key factor in engaging in physical activity in the 55+ age group. This result is consistent with a systematic review by Palombi et al. (2025), which highlighted the role of psychological needs and self-determination in shaping physical activity behaviors of older adults.

The results indicated that health problems constitute the strongest barrier in the 55+ age group ($H = 26.50$; $p < 0.001$). This is consistent with the systematic review published in Age and Ageing by Baxter et al. (2024), which identified concerns about physical fitness and health among the most prevalent barriers to physical activity in adults over 70.

Interestingly, in this study lack of time, fatigue, and lack of motivation were universal barriers, independent of age ($p > 0.05$ for all Kruskal–Wallis tests). This suggests that despite different life circumstances – such as professional work in younger individuals and health limitations in older individuals – structural and motivational barriers transcend age (Dishman & DeBoer, 2023).

5. Conclusions

Respondents rated the importance of individual motives for engaging in physical activity on a scale of 1 to 5, with 5 representing the primary motive. The highest mean values were achieved by health-related motives: improving health, maintaining good fitness, and relaxation and stress reduction. Analysis of differences between age groups indicated that older age groups placed increasing importance on health-related motivations,

particularly improving health and maintaining fitness. Younger individuals more frequently emphasized weight loss and image-related aspects, reflecting different health needs and priorities at different stages of life.

The most important conclusions are therefore:

1. Motives for engaging in physical activity vary significantly depending on age.
2. Aesthetic and social motives dominate in younger groups, while health-related motives dominate in older groups.
3. Time and health barriers constitute the main limitations to regular activity.
4. Activities promoting physical activity should be tailored to the specific needs of different age groups.

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Olga Smoleńska: Conceptualization (supporting), Methodology (supporting), Supervision (lead), Writing – review & editing (lead), Validation (lead).

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All authors read and approved the final manuscript. All authors meet the criteria for authorship according to the ICMJE (International Committee of Medical Journal Editors) guidelines.

Conflict of Interest

The authors declare no conflict of interest. The research was conducted without any commercial or financial involvement that could be construed as a potential conflict of interest.

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Availability of Data and Materials

Data supporting the results of this study are available from the corresponding author upon reasonable request, subject to compliance with Regulation (EU) 2016/679 (GDPR), the Ethics Policy of the Nicolaus Copernicus University in Toruń, and the informed consent of study participants. The dataset has been deposited in the NCU institutional repository and may be shared after signing a Data Sharing Agreement.

Ethics Statement

Ethical approval: The study was conducted in accordance with the Declaration of Helsinki (2013 version) and Polish regulations concerning research involving human subjects. Informed consent: All participants provided informed consent to participate in the study before completing the questionnaire. Consent was obtained electronically by ticking the appropriate box in the online form after reviewing an information sheet. Data protection: Data were collected and stored in accordance with the General Data Protection Regulation (GDPR);

all data were anonymized prior to analysis. Special groups: The study included minors aged 15–17; in accordance with Polish law, parental or legal-guardian consent was obtained for this group.

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