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Physical activity promotion. A cross-sectional study exploring the practice, attitudes, and barriers amongst Luxembourg's healthcare professionals

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Original article

Abstract

Purpose: Physical activity (PA) is known to help prevent and minimise the impact of Non-Communicable Diseases (NCDs). This study aimed to explore the attitudes and practices of general practitioners (GPs) and physiotherapists (PTs) in Luxembourg towards promoting PA and the barriers they face.

Material and methods: A total of 174 healthcare professionals (100 GPs and 74 PTs) completed an anonymous electronic questionnaire, which included questions on demographics, attitudes towards PA prescription, the importance of PA as a preventative and treatment modality for NCDs, barriers to exercise prescription, and interest in expanding their knowledge about PA.

Results: The results revealed that 56% of HCPs recommended PA weekly, with 43.7% providing detailed guidelines. Most HCPs (71.6%) acknowledged the importance of PA for managing and preventing chronic conditions. The main barriers to PA counselling were lack of time (23.6%), lack of knowledge (10.9%), and patients preferring medication over exercise (30.5%).

Conclusions: While the study found that healthcare professionals in Luxembourg have positive attitudes towards PA, there are still limitations in prescribing and recommending PA.

Keywords

- general practitioners
- physiotherapists
- non-communicable disease management
- preventative medicine
- exercise prescription

Contribution

A – Preparation of the research project
B – Assembly of data
C – Conducting of statistical analysis
D – Interpretation of results
E – Manuscript preparation
F – Literature review
G – Revising the manuscript

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Introduction

Luxembourg is the second most active country in Europe, with a prevalence of 63% of citizens participating in sports or physical.[1] Despite this, the 2020 GoPA Country card shows that 39% of the population in the Grand Duchy is physically inactive, which is above the global average of 30%.[2] Luxembourg is also the European country that spends the most time sedentary, on average 12 hours a day.[3] Physical activity (PA) acts not only in the prevention but also in the Management of many Non-Communicable Diseases (NCDs) and other health conditions, including diabetes, obesity, cardiovascular disorders, certain types of cancer, osteoporosis, and mental impairments.[4,5] PA not only promotes health but also improves quality of life.[6] Physical inactivity is also associated with premature mortality. Eighty-eight percent of deaths in Luxembourg are from NCDs, with 9.8% of deaths due to physical inactivity.[2] While activity levels in Luxembourg are higher than in other parts of Europe, these statistics reflect the whole population. Within the clinical population and population at risk of NCDs, PA frequency and intensity are lower, and in overweight and obese people, sedentary times were longer.[3] This data underlines the importance of finding effective strategies to increase the Luxembourgish population's physical activity levels.

Healthcare professionals (HCPs) are crucial in promoting PA to their patients.[7] The following studies suggest that counselling by HCPs influences patients' PA levels and improves their quality of life.[8,9] GPs and physiotherapists are ideally positioned to promote PA 10 because they have access to a sizeable sedentary population and represent a reliable source for patients.[9] In 2013, Luxembourg created a program focused on promoting PA in patients with NCDs. In 2018, the project was expanded to increase education for HCPs and raise awareness of the health sports offered to doctors. The health sports offers increased from five categories (obesity, cardiology, oncology, neurology, and orthopaedics) in 2014 to eight categories (including diabetes, stroke, and psychosomatic diseases) in 2018.[11,12] Healthcare professionals (HCPs) have a very determinant role in promoting PA to their patients.[7] Hence, there is scientific evidence showing that the Luxembourgish population has high adherence to PA guidelines.[3,6] The following studies seem to suggest that counselling by HCPs influences patients' PA levels and improves their quality of life.[8,13] In fact, GPs and physiotherapists are ideally positioned to promote PA 9 because they have access to a sizeable sedentary population and represent a reliable source for patients.[14,15] GPs are primary care providers are often well-positioned to provide patients with advice and support.

This study explored the PA promotion practice, attitudes, and barriers faced by Luxembourg general practitioners (GPs) and physiotherapists (PTs).

Materials and methods

The target population for this cross-sectional study was HCPs across Luxembourg. Being registered as a general practitioner or physiotherapist and working in Luxembourg were the main inclusive criteria. Exclusion criteria included not working in Luxembourg, not speaking English or French, and/or being retired. Collège Médical Luxembourg circulated the questionnaire to all members. The email addresses of registered physiotherapists in Luxembourg were obtained from the Association Luxembourgeoise des Kinésithérapeutes book, and all members were emailed.

The information for the study and link to a self-administered, anonymous electronic questionnaire[9] was distributed to 1850 participants, of whom 894 were general practitioners and 956 were physiotherapists. Of the 894 general practitioners who received the email from the association, 109 completed the questionnaire. Of the 956 physiotherapists who sent the email, 120 returned invalid email addresses, and 74 completed the questionnaire. Sending the questionnaire to all registered GPs and PTs helps prevent researcher bias. All participants have given their consent to participate in this study – the demographics of the respondents are available in Table 1.

The outcome measures of the questionnaire consisted of demographic information, practices and attitudes regarding PA prescription, attitudes toward the importance of PA as a preventative and treatment modality for NCDs, barriers to exercise prescription and interest in knowledge expansion regarding PA. Questions were all compulsory to answer, ensuring only completed questionnaires were submitted.

The data were analysed using the IBM SPSS STATISTICS (Version 28). Descriptive stats, including frequencies, were presented in tables and figures. Comparisons between groups were conducted using using chi-square (χ^2). The level of significance was set at $p < 0.05$.

Results

Demographics

More GPs (57.5%) than physiotherapists (42.5%) responded to the survey. More women responded to the study (52.3%) than men (47.7%). According to the sample, there are more female GPs (55%) and more male physiotherapists (51.4%). The demographics can be found in Table 1.

Practices and attitudes regarding PA prescription

More than half of the GPs and PTs recommend PA weekly, with less than half giving detailed guidelines in frequency, intensity, type and duration (Figure 1).

Other practices performed by the surveyed GPs and physiotherapists are presented in Table 2. Concerning daily recommendations, the most common recommendations given by both the GPs and physiotherapists are

Table 1. Demographics of survey participants

		All respondents		General Practicioner		Physiotherapist	
		N	%	N	%	N	%
Professional affiliation		174	100	100	57.5	74	42.5
Gender	Man	83	47.7	45	45.0	38	51.4
	Woman	91	52.3	55	55.0	36	48.6
	Total	174	100	100	100	74	100
Years of experience	0–5	37	21.3	19.0	19.0	18	24.3
	6–10	30	17.2	16	16.0	14	18.9
	11–15	19	10.9	12	12.0	7	9.5
	16–20	19	10.9	11	11.0	8	10.8
	21–25	36	20.7	25	25.0	11	14.9
	26+	33	19	17	17.0	16	21.6

Table 2. Currently practices towards physical activity

Survey question	Answer	All respondents		General Practicioner		Physiotherapist	
		N	%	N	%	N	%
Which of these daily recommendations do you recommend to your patients to improve their lifestyle?	Sleep (7–9h)	132	75.9	76	76.0	56	75.5
	Walking	162	93.1	92	92.0	70	94.6
	Lift weights	49	28.2	27	27.0	22	29.7
	Contact with nature	94	54.0	68	68.0	26	35.1
	Eating whole foods	109	62.6	84	84.0	25	33.8
	Appropriate hydration	143	82.2	85	85.0	58	78.4
	Reducing sedentary time	143	82.2	86	86.0	57	77.0

Survey question	Answer	All respondents		General Practicioner		Physiotherapist	
		N	%	N	%	N	%
What do you base your physical activity recommendations on?	Scientific and evidence-based research	104	59.8	57	57.0	47	63.5
	Medical course	113	64.9	77	77.0	36	48.6
	CPD	92	52.9	45	45.0	47	63.5
	Informal discussions with qualified professionals in the area	61	35.1	32	32.0	29	39.2
	Magazines	15	8.6	8	8.0	7	9.5
	World Health Organization (WHO)	60	34.5	34	34.0	26	35.1

walking (93.1%), sleeping (75.9%), reducing sedentary time (82.2%) and hydration (82.3%). Despite including resistance training in many PA-recommended guidelines, few HCPs recommend lifting weights. Compared to physiotherapists, GPs showed higher recommendations for contact with nature ($\chi^2 = 18.494$, df = 1, $p < 0.001$) and eating whole foods ($\chi^2 = 45.828$, df = 1, $p < 0.01$). Both female GPs and physiotherapists recommend more contact with nature than their male colleagues ($\chi^2 = 5.7$, df = 1, $p = 0.017$).

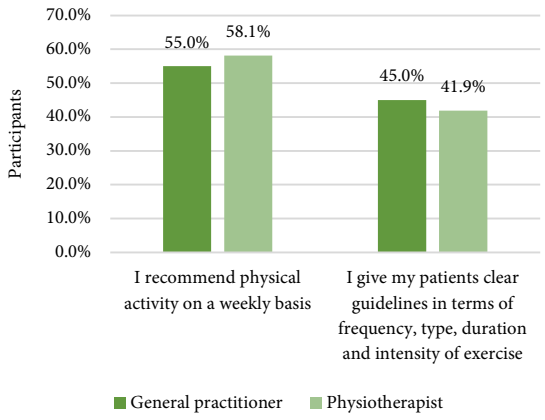

Figure 1. Practices related to physical activity prescription

HCPs derive their information regarding PA recommendations from different sources (Table 2). Just under 60% use scientific and evidence-based research, and approximately 35% depend on the WHO for information. Significant differences were found between genders and professional affiliations regarding this variable. Male professionals rely more on scientific and evidence-based research than female colleagues ($\chi^2 = 6.745$, df = 1, $p = 0.009$). Another significant difference concerns professional affiliation: GPs base their recommendations mainly on their medical course ($\chi^2 = 15.0$, df = 1, $p < 0.001$), while physiotherapists on CPD courses ($\chi^2 = 5.9$, df = 1, $p = 0.016$).

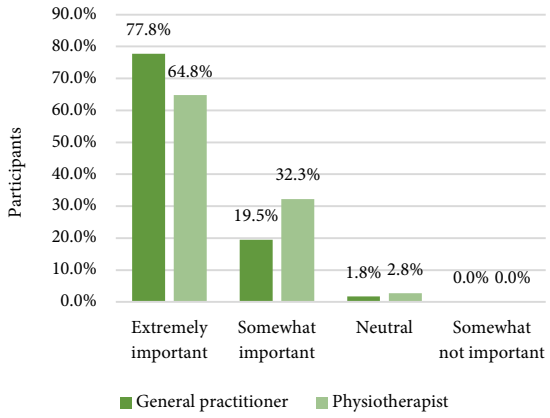

Figure 2. Attitudes toward the importance of PA as a preventative and treatment modality for NCDs

Healthcare professionals have recognized physical activity as a crucial tool in the prevention and treatment of non-communicable diseases (Figure 2). Figure 3 illustrates the barriers to promoting PA during consultations. Lastly, 16% of the GPs and 4.1% of the physiotherapists mentioned insufficient knowledge and resources. As for the reasons "it seems to take too much of my consultation time" and "I don't have the necessary knowledge and resources", the difference between GPs and physiotherapists was significant: more GPs than physiotherapists reported the lack of time during consultations ($\chi^2 = 5.409$, df = 1, $p = 0.020$), but also that they

don't have the necessary knowledge and resources to recommend PA to their patients ($\chi^2 = 6.2$, df = 1, $p = 0.012$).

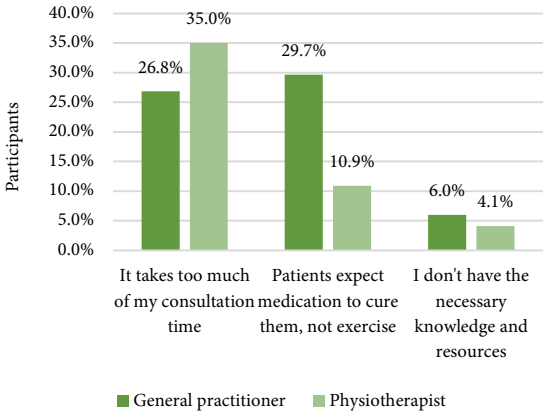

Figure 3. Barriers to promotion of PA

Interest in knowledge expansion regarding PA

Regarding participation in a course about exercise promotion (Table 3), 40.2% of the HCPs mentioned having already taken part in one, while 59.8% reported that they had never participated in such a course. There was no significant difference when responses were analysed by professional affiliation, gender, and years of experience.

Discussion

Despite HCPs believing in the importance of PA for prevention and as a treatment for managing NCDs, just over 50% of them recommend exercise weekly and even fewer provide detailed recommendations for PA.

Table 3. Interest in learning more about physical activity recommendations and guidelines

		All respondents		General Practicioner		Physiotherapist	
		N	%	N	%	N	%
Have you ever participated in a course on exercise promotion?	Yes	70	40.2	39	39.0	31	41.9
	No	104	59.8	61	61.0	43	58.1
Are you interested in learning more about PA prescriptions and guidelines	Yes	131	75.3	78	78.0	53	71.6
	No	43	24.7	22	22.0	21	28.4

This study found a higher percent of HCPS prescribing exercise when compared to a Luxembourg-based study that assessed the impact of a national PA promotion education program that targeted HCPs and patients with NCDs which found that despite this campaign, physician's knowledge of therapeutic PA on offer was 21%.[12] The number of HCPs who indicated they promote PA was far lower than in two South African studies, both of which found more than 90% of GPs promote PA[9] but this is higher than a survey based on Swedish GPs where only 27% reported using Swedish PA on Prescription regularly[16] and similar to a Nigerian study found 49.1 & of PTs incorporated PA prescription into practice.[17] PTs usually incorporate PA promotion and exercise prescription into their responsibilities.[10]

Doctors feel more confident when providing general advice than specific advice on exercise.[14] However, results from another study suggest that brief advice from healthcare professionals is sufficient to make individuals physically active.[18] A systematic review has also shown that PA levels of patients can be altered by giving brief advice from a health professional.[19]

Training and educating HCPs is vital to grow the exercise medicine practice and encourage HCPs to use exercise as a preventative tool or to incorporate it into treatments for NCDs.[11] Most of the GPs rely on their knowledge from medical school to prescribe exercise. Physiotherapists' knowledge is mainly based on CPD courses. These results are in contrast with the study of[20], which found that 43% of GPs attended CPD courses about PA and health. Yet, scientific evidence indicates that the time dedicated to PA in medical schools is low and not specific enough,[21] highlighting the role that CPD courses can play in increasing knowledge related to PA. In the study of,[22] researchers determined the content given to the students of all medical schools in

the UK, and the results revealed an apparent lack of essential teaching content, such as the Chief Medical Officer guidance for PA. In Luxembourg, since 2019, half-day courses about PA have begun to be offered to doctors working in the country, as well as a 20 min course to medical students at the University of Luxembourg about the benefits of PA for health.[2] There are numerous questions over whether medical programmes incorporate enough information regarding PA promotion and exercise prescription. Only healthcare professionals with the knowledge and experience in PA counselling are physiotherapists and nurses.[23] A concerning revelation emerged from the study: more than 59.8% of the HCPs had never participated in a course about exercise promotion. These results inevitably raise concerns about the healthcare professionals' reliability when recommending PA to their patients, as they might be unable to provide adequate guidance on PA.

The leading daily advice recommended by both GPs and physiotherapists is walking (93.1%) and reducing sedentary time (82.2%). Several other studies reported 'walking' as one of the main recommendations given to patients.[24] Reducing sedentary time was the second most recommended option, along with appropriate hydration. This recommendation is highly significant, and it shows excellent awareness from the healthcare professionals in Luxembourg since, on average, the population of the Grand Duchy spends twelve hours per day in a seated position. For this reason, reducing sedentary time among the population seems to be crucial. The least recommended activity prescribed by the respondents is lifting weights (28.2%). Resistant training is an essential pillar of the recommended exercise guidelines from many health organisations. There is overwhelming evidence showing the importance for adults to engage in strength activities to prevent the normal biological processes that are characteristic of ageing, such as loss of muscle mass, strength and overall function of the muscles,[25] which makes the adult lose the ability to autonomously perform physical activities of the daily life.[26]

In this study, both GPs and physiotherapists recognise the importance of PA in the prevention and Management of chronic diseases, evidenced by the fact that 71.6% of the participants agreed that PA is extremely important and 26.2% reported that it's somewhat important. Despite acknowledging the importance of exercise, not all HCPs promote PA or give guidelines for exercise. In the present study, healthcare professionals reported that the main barriers to not recommending PA more often to their patients are a perceived expectation from patients to receive medication and not exercise (30.5%), the fact that it takes too much of the consultation time (23.6%) and the lack of knowledge and resources (10.9%). These results align with the literature demonstrating that patients have expectations about medication. Still, most of the time, the determining factor is the doctor's perception of the patient's expectations. This judgement could also reflect what the HCP perceives the patients want, and it might not have been adapted to patient expectations and desires in today's world, where there is more public information regarding the importance of exercise. Because patients' expectations have a significant influence on the doctors' practices, this leads to the prescribing of medication at the detriment of physical activity, even though PA is fundamental in the treatment and prevention of chronic diseases.[24] Further studies are needed to understand this dimension better.

Although 89% of the participants mentioned having sufficient knowledge and resources to recommend PA to their patients, literature shows that the majority of HCPs do not receive suitable training about PA. Hence, they don't have the experience and confidence to efficiently promote it to their patients.[13,22] This piece of data suggests a contradiction. HCPs claim to be qualified for recommending PA, but the patient's expectations have a much greater weight. When comparing this study with other studies, it was found that inadequate knowledge and education on PA is one of the barriers for HCPs to not promoting PA to their patients.[21] Physiotherapists may also have little knowledge when it comes to treatments that are related to improving and maintaining general health.[27]

Lack of time during consultations was also found to be a reason for limited PA promotion when assessing the impact of a campaign to promote PA in HCPs and patients with NCDs. PA is not the only lifestyle factor that is not always covered during GP consultations. Time was also a limiting factor when it came to discussing lifestyle factors like smoking.[28] Regarding the lack of time during consultations. A few studies suggest this is another main obstacle to promoting PA. HCPs from this study seem to have a wrong estimate of the time needed to advise and counsel patients about PA since it takes less than 5 minutes to do it.[26] In Luxembourg, GP consultations average between 10[12] and 17.6[29] minutes. PA counselling is not covered by national health insurance, meaning HCPs might feel they are not financially incentivised to advise in this regard.[12,13]

Compared to physiotherapists, GPs reported a more significant lack of necessary knowledge and resources to recommend PA and a lack of consultation time. This can be explained by the fact that physiotherapists have a knowledge base about physiotherapy[30] and, as reflected in their responses, they regularly attend CPD

courses on exercise promotion, making them feel more comfortable promoting PA and providing a slight advantage compared to GPs.

The results show that the inquired HCPs have between 6 and 20 years of experience[9,14] (39%) and more than 20 years of experience (39.7%). These results differ from those obtained in the study in South Africa, where 71% of the participants had more than 20 years of experience.[9] There is insufficient scientific evidence to show whether age is a determinant factor in counselling PA to patients. Further investigation needs to be conducted into this topic to verify this statement.

Conclusions

HCPs in Luxembourg acknowledge the importance of exercise and PA in preventing and managing NCDs. Despite this, almost half of them do not promote PA or prescribe exercise.
The findings highlight the need for standardized, evidence-based PA prescriptions among healthcare professionals.

Perspectives

The Exercise is Medicine campaign has gained global attention for promoting the role of exercise in preventing and treating non-communicable diseases (NCDs). The European Union has encouraged member states to promote health-enhancing physical activity across different sectors. In the medical industry, healthcare providers (HCPs), such as doctors and nurses, can play a significant role in promoting physical activity, as they often interact with people who may be inactive or have sedentary lifestyles. Patients often trust and respect the advice and recommendations given by HCPs, making them effective communicators of information about the importance of physical activity. General Practitioners (GPs), who are often considered as family doctors, have a long-term relationship with their patients. Patients usually choose a GP they are comfortable with and remain with them throughout their lifetime. This relationship gives GPs the tools to help bring about meaningful and long-lasting changes in their patients' lifestyles.

References

[1] EC. *Sport and Physical Activity: Special Eurobarometer 525*. European Comission; 2022. doi: 10.2766/356346.

[2] GOPA. *Global observatory for physical activity card: Luxembourg*. https://new.globalphysicalactivityobservatory.com/New%20Country%20cards/Luxembourg.pdf. Accessed January 15, 2024.

[3] Collings PJ, Backes A, Aguayo GA, et al. Device-measured physical activity and sedentary time in a national sample of Luxembourg residents: The ORISCAV-LUX 2 study. *Int J Behav Nutr Phys Act*. 2022;19(1):161. doi: 10.1186/s12966-022-01380-3.

[4] Lion A, Lethal J, Delagardelle C, Seil R, Urhausen A, Theisen D. General practitioners do not counsel more physical activity after a public health campaign. *Dtsch Z Sportmed*. 2022;73(1):36-42. doi: 10.5960/dzsm.2021.510.

[5] Bull FC, Al-Ansari SS, Biddle S, et al. World Health Organization 2020 guidelines on physical activity and sedentary behaviour. *Br J Sports Med*. 2020;54(24):1451-1462. doi: 10.1136/bjsports-2020-102955.

[6] Alkerwi A, El Bahi I, Stranges S, et al. Geographic variations in cardiometabolic risk factors in Luxembourg. *Int J Environ Res Public Health*. 2017;14(6):648. doi: 10.3390/ijerph14060648.

[7] Cunningham C, O'Sullivan R. Healthcare professionals promotion of physical activity with older adults: A survey of knowledge and routine practice. *Int J Environ Res Public Health*. 2021;18(11):6064. doi: 10.3390/ijerph18116064.

[8] Orrow G, Kinmonth AL, Sanderson S, Sutton S. Effectiveness of physical activity promotion based in primary care: Systematic review and meta-analysis of randomised controlled trials. *BMJ*. 2012;344(7850):16. doi: 10.1136/bmj.e1389.

[9] Roos MG. *Exercise prescription: Knowledge, practice and attitudes among South African doctors*. [PhD thesis, unpublished]. Bloemfontein: University of Free State; 2014.

[10] Eisele A, Schagg D, Göhner W. Exercise promotion in physiotherapy: A qualitative study providing insights into German physiotherapists' practices and experiences. *Musculoskelet Sci Pract*. 2020;45:102104. doi: 10.1016/j.msksp.2019.102104.

[11] Lethal J. *Health sport campaign in Luxembourg: Evaluation of the Sport-Santé campaign to promote physical activity for patients with non-communicable diseases*. [PhD thesis]. Luxemburg: Universität des Saarlandes; 2020. https://www.sport-sante.lu/wp-content/uploads/2022/11/Dissertation_UdS_Lethal_Jil.pdf. Accessed January 15, 2024.

[12] Lion A, Lethal J, Delagardelle C, Seil R, Urhausen A, Theisen D. General practitioners do not counsel more physical activity after a public health campaign. *Dtsch Z Sportmed*. 2022;73(1):36-42. doi: 10.5960/dzsm.2021.510.

[13] Lobelo F, de Quevedo IG. The evidence in support of physicians and health care providers as physical activity role models. *Am J Lifestyle Med*. 2016;10(1):36-52. doi: 10.1177/1559827613520120.

[14] O'Brien S, Prihodova L, Heffron M, Wright P. Physical activity counselling in Ireland: A survey of doctors' knowledge, attitudes and self-reported practice. *BMJ Open Sport Exerc Med*. 2019;5(1): e000572. doi: 10.1136/bmjsem-2019-000572.

[15] Woodhead G, Sivaramakrishnan D, Baker G. Promoting physical activity to patients: A scoping review of the perceptions of doctors in the United Kingdom. *Syst Rev*. 2023;12(1):104. doi: 10.1186/s13643-023-02245-x.

[16] Brorsson Lundqvist E, Praetorius Björk M, Bernhardsson S. Physical activity on prescription in Swedish primary care: A survey on use, views, and implementation determinants amongst general practitioners. *Scand J Prim Health Care*. 2024;42(1):61-71. doi: 10.1080/02813432.2023.2288126.

[17] Bello B, Hartley SE, Yeowell G. Nigerian physiotherapists' knowledge, current practice and perceptions of their role for promoting physical activity: A cross-sectional survey. *PLoS One*. 2022;17(5):e0266765. doi: 10.1371/journal.pone.0266765.

[18] Chatterjee R, Chapman T, Brannan MGT, Varney J. GPs' knowledge, use, and confidence in national physical activity and health guidelines and tools: A questionnaire -based survey of general practice in England. *Br J Gen Pract*. 2017;67(663):e668-e675. doi: 10.3399/bjgp17X692513.

[19] Kahn EB, Ramsey LT, Brownson RC, et al. The effectiveness of interventions to increase physical activity a systematic review. *Am J Prev Med*. 2002;22(4 Suppl):73-107. doi: 10.1016/s0749-3797(02)00434-8.

[20] Buffart L, van der Ploeg HP, Smith B, Kurko J, King L, Bauman AE. General practitioners' perceptions and practices of physical activity counselling: changes over the past 10 years. *Br J Sports Med*. 2009;43(14):1149-1153. doi: 10.1136/bjsm.2008.049577.

[21] Netherway J, Smith B, Monforte J. Training healthcare professionals on how to promote physical activity in the UK: A scoping review of current trends and future opportunities. *Int J Environ Res Public Health*. 2021;18(13):6701. doi: 10.3390/ijerph18136701.

[22] Weiler R, Chew S, Coombs N, Hamer M, Stamatakis E. Physical activity education in the undergraduate curricula of all UK medical schools: Are tomorrow's doctors equipped to follow clinical guidelines? *Br J Sports Med*. 2012;46(14):1024-1026. doi: 10.1136/bjsports-2012-091380.

[23] Mckenna J, Naylor PJ, Mcdowell N. Barriers to physical activity promotion by general practitioners and practice nurses. *Br J Sports Med*. 1998;32(3):242-247. doi: 10.1136/bjsm.32.3.242.

[24] Vinu W, Kumar V. Remedial exercise training program (aerobic and brisk walk training) for type II diabetes (T2DM). *SPORT TK-Revista EuroAmericana de Ciencias del Deporte*. 2024;13(6). doi: 10.6018/sportk.548491.

[25] Keller K, Engelhardt M. Strength and muscle mass loss with aging process. Age and strength loss. *Muscles Ligaments Tendons J*. 2014. 24;3(4):346-350.

[26] McInnis KJ, Franklin BA, Rippe JM. Counseling for physical activity in overweight and obese patients. *Am Fam Physician*. 2003 Mar 15;67(6):1249-1256.

[27] Kunstler BE, Cook JL, Kemp JL, O'Halloran PD, Finch CF. The self-reported factors that influence Australian physiotherapists' choice to promote non-treatment physical activity to patients with musculoskeletal conditions. *J Sci Med Sport*. 2019;22(3):275-280. doi: 10.1016/j.jsams.2018.08.006.

[28] Stead M, Angus K, Holme I, et al. Factors influencing European GPs' engagement in smoking cessation: A multicountry literature review. *Br J Gen Pract*. 2009;59(566):682-690. doi: 10.3399/bjgp09X454007.

[29] Schäfer WLA, van den Berg MJ, Groenewegen PP. The association between the workload of general practitioners and patient experiences with care: Results of a cross-sectional study in 33 countries. *Hum Resour Health*. 2020;18(1):76. doi: 10.1186/s12960-020-00520-9.

[30] Marques-Sule E, Miró-Ferrer S, Muñoz-Gómez E, et al. Physical activity in health care professionals as a means of primary prevention of cardiovascular disease: A STROBE compliant cross-sectional study. *Medicine*. 2021;100(22):e26184.doi:10.1097/MD.0000000000026184.