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Physical activity prescription in general practice in France: where do we stand? A cross-sectional study

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Abstract

Background Physical activity on prescription (PAP) is recognized as an effective preventive and therapeutic tool for various diseases, yet its application by general practitioners (GPs) varies widely. This study aims to analyse PAP usage practices among GPs in France, focusing on prescription frequency, targeted pathologies, and influencing factors. It also explores GPs' perceptions of facilitators and barriers to PAP.

Methods A cross-sectional study was conducted between October 23, 2023, and April 23, 2024, collecting data from a sample of GPs across France. A structured questionnaire was used to assess the frequency of PAP usage, target populations, as well as GPs' knowledge and perceived barriers to prescribing PA. Descriptive and analytical methods were employed to analyse the data, and logistic regression was used to examine associations between physician characteristics, PAP practices, and key barriers to prescribing.

Results Among respondents, 39.1% reported prescribing PAP, with a median prescription rate of approximately twice per month. Reduced sedentary behaviour (< 4 h) was significantly associated with a higher frequency of PAP (pOR 3.6, $p = 0.044$). Knowledge of a nearby sport-health facility strongly predicted prescription (pOR 3.7 $p < 0.001$). Prescription support tools positively influenced prescribing rates (pOR 1.6 $p = 0.041$). In contrast, GPs unaware of any tools prescribed significantly less.

Conclusion These findings suggest that improving access to sport-health facilities and providing GPs with effective support tools could significantly enhance PAP practices.

Introduction

Physical inactivity is now one of the main risk factors for health problems, with a global burden of around 7.2% of all-cause mortality [1]. The impact of physical activity on mortality and quality of life is well established. Current physical activity guidelines suggest that there is no minimum threshold of exercise required to gain health benefits [2, 3]. Any amount of movement is beneficial, with research indicating that as little as 15 min of moderate exercise per day can reduce mortality risk and improve life expectancy [4].

Physical activity serves as a valuable complement to usual treatment in both the prevention and treatment of a wide range of conditions, including cardiovascular diseases [5, 6], respiratory [7], oncologic [8] and psychiatric conditions [9, 10].

In response to these problems, in France, a decree came into effect in 2017, allowing doctors to prescribe adapted

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physical activity to patients. Adapted Physical Activity (APA) is a structured form of physical activity prescribed to individuals with barriers to regular exercise, such as chronic conditions, to promote an active lifestyle and reduce health risks. Distinct from rehabilitation, APA is provided by qualified professionals rather than healthcare providers performing medical therapy [11].

The French legal framework places general practitioners (GPs) at the center of this prescription process. Decree no. 2016 – 1990, enacted in December 2016, formally recognized the GP's role in prescribing physical activity based on a patient's pathology, physical capacities, and medical risk. This role was expanded in March 2023 [12], allowing all medical doctors to prescribe APA, further reinforcing its integration into routine healthcare. Moreover, APA dispensation can be covered in specific contexts, particularly through local and regional health initiatives, making it more accessible to patients. The prescription follows a structured approach outlined in official guidelines [13]. This process includes motivational interviewing, a comprehensive physical examination, and a cardiovascular risk assessment to tailor recommendations to the patient's condition. The written prescription adheres to the FITT [14] model (frequency, intensity, type, time), ensuring that the prescribed activity is adapted to the pathology and the patient's functional abilities. Additionally, regarding APA dispensation, physicians guide patients based on their level of autonomy toward appropriate professionals or existing sports-health structures within their region, such as Maisons Sport-Santé (sports-health facilities) or structured support programs [13].

Internationally, this approach aligns with Physical Activity on Prescription (PAP), where healthcare professionals prescribe tailored physical activity to prevent and manage chronic diseases [15, 16]. While APA and PAP are based on different legal frameworks, they share the same fundamental concept and objectives. Therefore, to ensure clarity and consistency, the term PAP will be used throughout this manuscript to refer to both APA (France) and PAP (internationally).

Despite the legal framework, PAP is still not widely used in France. In local studies based on small samples, between 15% and 40% of general practitioners declared prescribing it [17, 18]. A review of the literature highlighted various barriers to prescribing, including a lack of training/knowledge, lack of time and unfamiliarity with local structures [19].

Despite this, brief interventions for physical activity uptake do not seem to be delivered frequently or consistently in primary care [20]. In contrast, written PAP could help in this regard as they seem to increase levels of physical activity [16].

Given the growing importance of PAP in healthcare and the role of GPs in promoting its use, there is a need to better understand the prescribing practices and barriers faced by GPs in France. Previous studies have highlighted gaps in knowledge and prescribing behaviour [15–17, 19], but limited data exist on the specific factors influencing these practices in different professional contexts.

The primary aim of this study is to analyse the prescribing practices of GPs in France, focusing on the frequency of PAP, the pathologies for which PAP is prescribed, and the factors influencing these practices. The secondary aim is to explore the facilitators and barriers to PAP, based on GPs' perceptions.

Methods

Study design

This was a cross-sectional observational study conducted using an online questionnaire. The survey was designed to assess general practitioners' (GPs) demographic characteristics, knowledge, and practices regarding the prescription of PAP. Additionally, the questionnaire explored the barriers faced by GPs who do not prescribe PAP. The STROBE checklist was used to ensure the completeness of reporting, and details on page numbers corresponding to checklist items are provided in Appendix 4.

Setting

The study was conducted in France and targeted GPs across the country. Data collection took place between October 23, 2023, and April 23, 2024.

Participants

The target population consisted of all practising GPs in France, estimated at 84,133 GPs [21]. Although the study was exploratory, an a priori sample size calculation was conducted to ensure the results were reasonably representative of the target population. Using Fisher's exact test for sample size calculation [22], a sample size of 383 participants was determined, providing sufficient statistical power with a 95% confidence level and a 5% alpha level.

The inclusion criteria specified that participants had to be actively practicing GPs in France, regardless of their practice setting (urban, semi-rural, or rural). Other medical professionals and incomplete questionnaire responses were excluded from the study.

Data collection

The questionnaire was distributed online through various channels, with priority given to official professional networks such as Departmental Councils of the Order of Physicians, Territorial Professional Health Communities, and Regional Unions of Healthcare Professionals.

Social media platforms, such as Facebook ©, were also used to broaden reach. The survey was shared in a specific medical group that required the input of the professional identity number. The questionnaire was hosted on the LimeSurvey platform. Data collection was carried out progressively from October 23, 2023, to April 23, 2024, in order to obtain the required number of responses for statistical analysis.

Variables and data sources

The questionnaire, detailed in Supplementary Materials (Appendix 1), covered PAP prescribing practices, knowledge, and perceived barriers through 18 questions and a free-text section. Collected demographic data included age, gender, practice location, experience, and professional training. PAP prescription practices were assessed in terms of prescription status, frequency, targeted conditions, prior training, and available prescribing tools.

Knowledge of PAP, general physical activity, and rehabilitation was evaluated using multiple-choice questions. Barriers to PAP were measured through Likert-type scales, assessing constraints such as lack of training, complexity of prescription, limited awareness of local sports-health structures, time constraints, patient motivation, and financial concerns.

To examine whether GPs' physical activity influenced prescribing behaviour, self-reported data on weekly moderate-to-vigorous physical activity and daily sedentary time were categorized based on international benchmarks [23]. Facilitators for PAP adoption were also explored, including proposed improvements in training, resource availability, communication campaigns, and potential social security reimbursement.

The questionnaire was developed by the authors based on clinical experience and a non-systematic review of relevant literature. To ensure clarity and relevance, it underwent face validity testing. It was pilot tested with ten general practitioners, who provided feedback on question wording, layout, and neutrality. Revisions were made accordingly prior to dissemination.

Bias management

Selection bias was mitigated by prioritizing official networks over social media recruitment. To minimize response bias, the definition of PAP was clearly stated at the beginning of the questionnaire. The survey was designed with neutral and structured wording to ensure clarity.

Statistical methods

Given the exploratory nature of the study, missing data was excluded from the analysis.

Respondents were categorized into prescribers and non-prescribers, and comparative analyses were conducted based on socio-demographic characteristics, knowledge of recommendations, and ease of PAP prescription. A descriptive analysis assessed self-reported barriers to PAP prescription, while a subgroup analysis explored the impact of prescribing practices, training, and available tools.

Chi^2 tests were used for categorical variable comparisons, with Fisher's exact test applied when expected cell counts were below five. A Chi^2 test also examined the association between self-reported sedentary time and PAP prescription status, with statistical significance set at $p < 0.05$.

To identify independent factors influencing PAP prescription, multivariate logistic regression analyses were conducted using two models. The first model assessed the likelihood of prescribing PAP (Yes/No) as the dependent variable, while the second model examined the frequency of PAP prescription among prescribers. Independent variables included self-reported sedentary behaviour, access to a nearby sports-health facility, knowledge of prescription aid tools, self-reported physical activity levels, dedicated training in sports medicine, practice in a sports-health center, and holding an academic position.

Prevalence odds ratios (pORs) with 95% confidence intervals (CIs) were calculated for all models, with statistical significance set at $p < 0.05$.

All statistical analyses were performed using DataTab software [24].

Qualitative data analysis

The free-text responses were analysed to identify recurring themes related to facilitators, barriers, lack of resources or references, and potential facilitators in the promotion and use of PAP. Free-text comments were analysed using thematic analysis based on the six-phase approach by Braun and Clarke [25]: (1) familiarisation with the data, (2) generating initial codes, (3) searching for themes, (4) reviewing themes, (5) defining and naming themes, and (6) producing the report. An initial open coding phase was followed by axial coding to identify relationships between themes. The coding was conducted independently by two researchers (DPH and LE). In the event of discrepancies, a third researcher (AF) was consulted to reach consensus. Triangulation was performed by comparing themes emerging from qualitative data with quantitative findings—particularly across prescriber and non-prescriber subgroups. Due to the anonymity of responses, member checking was not feasible.

Results

A total of 588 responses were received during the survey period. However, 205 responses were eliminated due to incomplete information. Finally, our study covered 383 participants.

Among these doctors, 247 (64.5%) were women, 135 (35.3%) were men and 1 (0.2%) was non-binary. Figure 1 shows the flowchart of the study.

The average age of respondents was 41.2, ranging from 26 to 76. Of these, 64 (16.7%) had trained in sports medicine and 24 (6.3%) practised in a sports and health centre. These elements can be found in Table 1.

The study reveals that 39.1% ($n = 150/383$) of respondents self-identified as regular prescribers of PAP. However, when asked about their actual prescribing behaviour in the past month, 27 of these 150 reported having issued no prescriptions. Therefore, the number of GPs who prescribed PAP at least once in the previous month was 123 (32.1% of all respondents). Among these practitioners, 40.7% prescribed it regularly for diabetes and 35.1% for cardiovascular pathologies. However, few prescribed it for psychiatric conditions (13.3%) and cancer (13.4%) (Fig. 2). 60.8% of participants in this study never prescribed PAP. The median PAP prescription was twice a month, with a minimum of zero and a maximum of one hundred prescriptions.

Regarding the perceptions of adapted physical activity:

– 25% of respondents considered that simply advising patients to take part in sport constituted PAP.

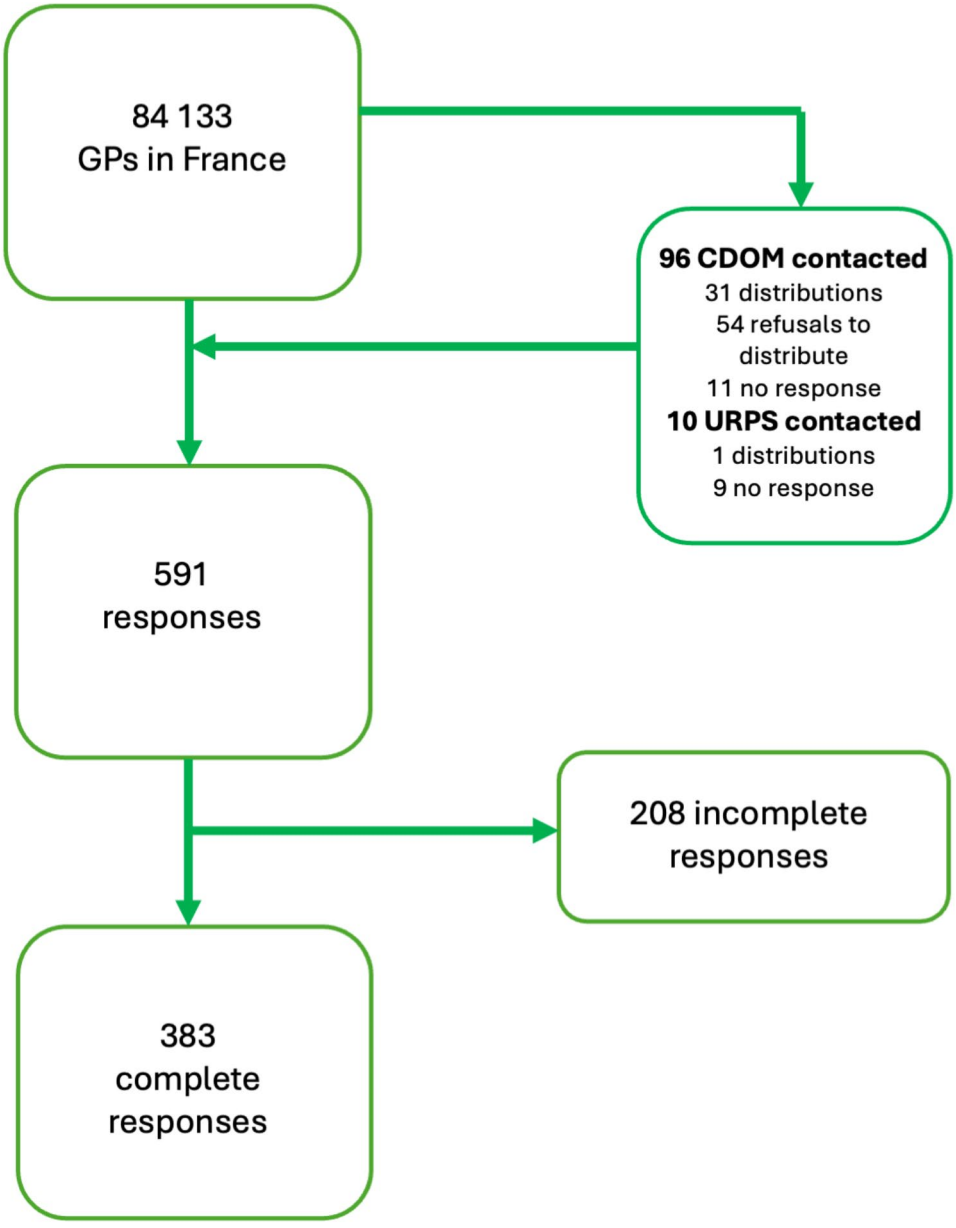

Fig. 1 Study flowchart

Table 1 Characteristics of the population

N **= 383**	**Prescribers *N*(%)**	**Non-prescribers *N*(%)**	***P*** **value**
Gender			0.582
- Female	100 (40.5%)	147 (59.5%)	
- Male	50 (37.0%)	85 (63.0%)	
- Non-binary	-	1 (100%)	
Average age (years)	42	40.7	0.166
Region			0.22
Occitanie	13 (24.1%)	41 (75.9%)	
Centre Val de Loire	0 -	1 (100%)	
Provence Alpes Côte d'Azur	14 (48.3%)	15 (51.7%)	
Bourgogne Franche Comté	6 (40%)	9 (60%)	
Bretagne	7 (30.4%)	16 (69.6%)	
Auvergne Rhône Alpes	46 (34.8%)	86 (65.2%)	
Ile de France	6 (30%)	14 (70%)	
Hauts de France	3 (37.5%)	5 (62.5%)	
Grand Est	25 (61%)	16 (39%)	
Pays de la Loire	12 (54.5%)	10 (45.5%)	
Nouvelle Aquitaine	13 (54.1%)	11 (45.9%)	
Normandie	5 (35.7%)	9 (64.3%)	
Place of work			
- Urban	52 (40%)	78 (60%)	0.81
- Semi-rural	61 (36.7%)	105 (63.3%)	0.397
- Rural	36 (40%)	54 (60%)	0.853
University practice	76 (41.9%)	105 (58.1%)	0,441
Working in a sports and health center	12 (50%)	12 (50%)	0.261
Training in sports medicine	32 (49.2%)	33 (50.8%)	
Physical activity			0.538
0 min	14 (40%)	21 (60%)	
< 60 min	25 (32.5%)	52 (67.5%)	
From 60 to 150 min	74 (39.8%)	112 (60.2%)	
> 150 min	37 (43.5%)	48 (56.5%)	
Sedentary lifestyle/Sitting time per day			0.024
- <4 h	10 (71.5%)	4 (28.5%)	
- From 4 to 6 h	45 (42.1%)	62 (57.9%)	
- >6 h	95 (36.3%)	167 (63.7%)	

- 65.8% considered that advice on adapting sport to pathologies was PAP.
- 85.1% of respondents agreed that a prescription for sports corresponds to PAP.
- 39.1% considered rehabilitation prescriptions, such as physiotherapy, to be PAP.

Among all respondents ($N = 383$), the most frequently reported barrier to prescribing PAP was a lack of knowledge about local structures (71.3%). This was followed by lack of knowledge or training (66.2%) and the perceived complexity of prescribing (34.8%). Patient-related factors were also noted: 54.3% of respondents agreed that patients lacked motivation, and 49.3% cited financial cost. Time constraints were less frequently endorsed, with only 27.2% indicating that limited consultation time was a barrier.

The main differences between prescribers and non-prescribers in terms of the main barriers to prescribing PAP were as follows:

- Lack of knowledge of local structures (80.7% of non-prescribers vs. 56.7% of prescribers).
- Lack of knowledge (77.7% vs. 48%).
- Complex prescribing (40.8% vs. 25.3%).

Prescribers and non-prescribers agreed on the other barriers studied: lack of time for consultations, lack of motivation from the patient and non-reimbursement of the PAP.

In terms of facilitators, both prescribers and non-prescribers agreed that more information campaigns should be run for doctors and patients (77.2% of respondents), that more training should be provided on the subject (74.9%), that a guide to local structures should be put in place (93.2%) and that a specific billing code should be introduced (68.6%).

In addition to the quantitative data collected, 49 GPs provided free-text responses that offered more in-depth insights into their opinions on PAP prescription, 17 being PAP prescribers and 32 not usually prescribing it. These comments revealed several unexpected but important themes, including the role of physicians in prescribing PAP, perceived barriers to PAP prescription, a lack of guidelines and training, and facilitators. For example, some respondents questioned the appropriateness of GPs prescribing physical activity, arguing that it should be the responsibility of public health authorities, while others highlighted financial and logistical barriers, such as the lack of reimbursement and patient motivation. The verbatim tables are available in supplementary materials appendix 5.

Factors influencing use of PAP

In the logistic regression analysis, several factors were found to be significantly associated with use of PAP. Having a health sports facility close to the practice was also a criterion favouring prescribing (prevalence odds ratio = pOR 3.6 [2.3–5.8], $p < 0.001$).

Prescribing aids had a positive influence overall (pOR 1.6 [1.02–2.5], $p = 0.041$).

A reduced sedentary lifestyle (< 4 h) of GPs was significantly associated with a greater frequency of PAP prescription (pOR 3.6 [1.0-12.7] $p = 0.044$). Training in sports medicine did not result in a higher prescription rate, neither practising in a health sports facility or having an academic position. Results can be viewed in Table 2.

Regarding the frequency of prescription, (quantitative variable) in both univariate and multivariate linear regression analyses, no factors were significantly associated with a more frequent prescription of PAP.

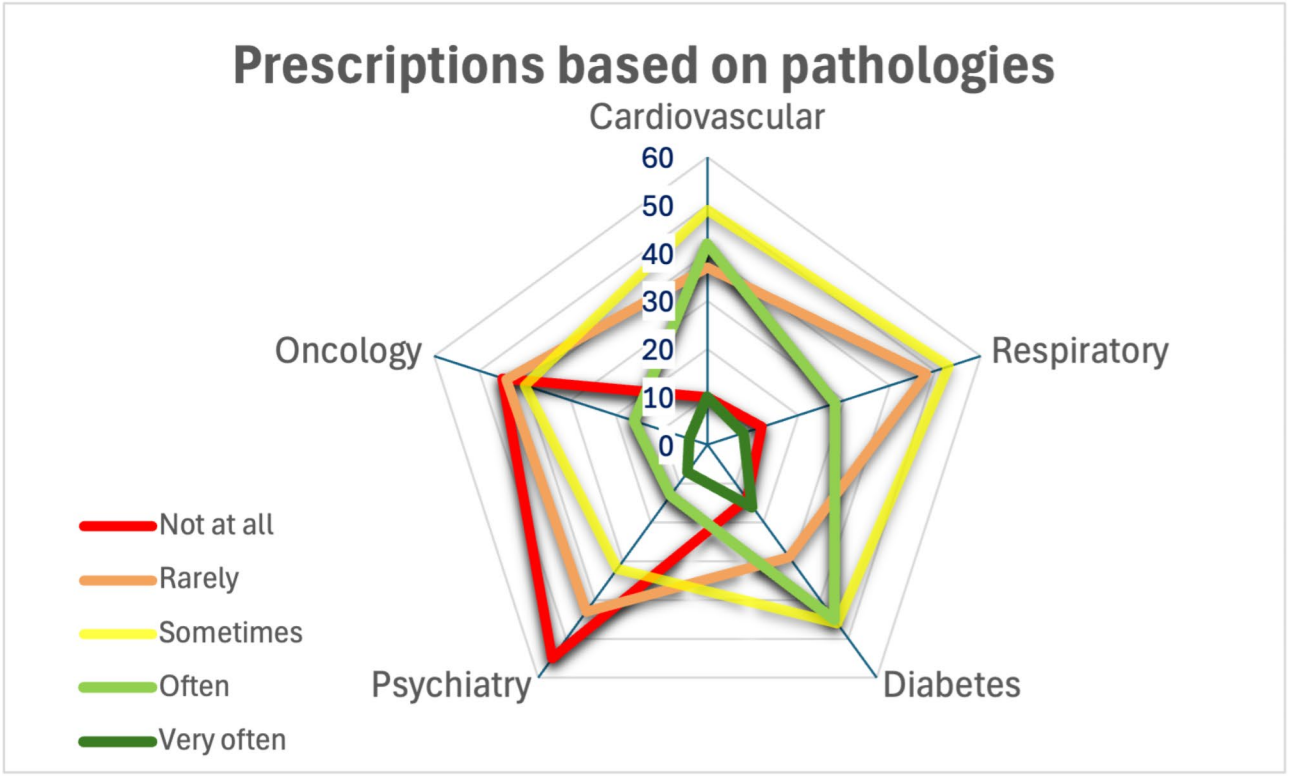

Fig. 2 Frequency of prescriptions based on pathology type. This radar chart displays the distribution of prescription frequencies across five pathological domains: Cardiovascular, Respiratory, Diabetes, Psychiatry, and Oncology. Prescription frequency is categorized into five levels—Not at all (red), Rarely (orange), Sometimes (yellow), Often (light green), and Very often (dark green). The figure highlights a higher frequency of prescriptions in cardiovascular and respiratory conditions, whereas psychiatric and oncological pathologies are associated with lower prescribing rates

Table 2 Factors influencing prescribing – multivariate logistic regression

	Prescribers ***N*** **= 150**	**Non-prescribers** ***N*** **= 233**	***P*** **value**	**Odds ratio (OR)**
Sedentary lifestyle				
• < 4 h	**10**	**4**	**0.044**	**3.6 [1.1–12.7]**
• From 4 to 6 h	45	62	0.39	1.2 [0.8-2.0]
• > 6 h	95	167		0.6 [0.4–0.7]
Practicing in health sports facility	12	12	0.93	1.0 [0.4–2.6]
Weekly moderate and high intensity physical activity				
• > 150 min	37	48	0.61	0.8 [0.3–1.9]
• 60–150 min	25	52	0.68	0.9 [0.4–1.9]
• < 60 min	74	112	0.38	0.7 [0.3–1.6]
• 0 min	14	21		
Academic position	76	105	0.36	1.2 [0.8–1.9]
Dedicated training in sports medicine	32	33	0.77	1 [0.4–2.6]
Knowledge of a sports and health center nearby	**83**	**55**	**< 0.001**	**3.7 [2.3–5.8]**
Knowledge of prescription aid tools	**78**	**88**	**0.041**	**1.6 [1.1–2.5]**

*Bold values indicate statistically significant results ($p < 0.05$)

In the subgroup analysis regarding prescription aids, only the Sportsantéclic website (was significantly associated with greater prescribing (pOR 2.4 [1.1–5.4] $p = 0.031$) as showed in Table 3.

A summary of the main prescription aids for PAP in France is available in Appendix 2.

Discussion

This study found that 39.1% of respondents self-identified as prescribers of physical activity on prescription (PAP). However, among these, 27 reported no prescriptions in the previous month, suggesting that only 32.1% of the total sample had prescribed PAP recently. This discrepancy likely reflects fluctuating engagement with PAP,

Table 3 Subgroup analysis of prescription aids

Prescription aids knowledge	Prescribers	Non-prescribers	*P*Value	Odds ratio (OR)
- French High Authority of Health prescription guide	60	72	0.067	1.5 [1.0-2.3]
- APAclic website	8	7	0.251	1.8 [0.7–5.1]
- Sportsantéclic website	**16**	**11**	**0.031**	**2.4 [1.1–5.3]**
- MedicoSport Santé prescription guide	7	6	0.27	1.9 [0.6–5.6]

* Bold values indicate statistically significant results ($p < 0.05$)

possibly influenced by seasonal trends, patient profiles, or uncertainties around appropriate indications. Prescription frequency varied widely, with a median of two prescriptions per month, but some respondents reported up to 100 prescriptions, indicating substantial heterogeneity in practice.

Regarding the medical conditions targeted, PAP was most commonly prescribed for patients with diabetes and cardiovascular pathologies. In contrast, its use was significantly less frequent for psychiatric conditions (13.3%) and cancer (13.4%). This mirrors findings from a cross-sectional study in French Guiana, where 74% of GPs reported prescribing PA for type 2 diabetes, but only 13% issued written prescriptions—despite French legislation requiring a formal written document for PAP [26]. This highlights a clear gap between reported practices and regulatory expectations.

Internationally, physical activity is rarely prescribed and is more often recommended orally by healthcare professionals, as in Canada [27] and Germany [28, 29]. In Sweden, where PAP is institutionalized within primary care, 27% of GPs used it monthly, and over half used it more sporadically [30]. Although practice location and experience influenced uptake, the Swedish study did not explore patient-level targeting. Similarly, a German study [29] showed low PAP use among GPs (9.3%), primarily for obesity (90.1%) and diabetes (63.0%), while psychiatric and oncologic patients were far less frequently targeted [29]. These trends mirror our findings and highlight an international underutilization of PAP for non-metabolic conditions.

Collaboration with other healthcare professionals and community-based structures may be essential for effective PAP implementation. In the Swedish study, a majority of GPs reported that PAP was more frequently delivered by other health professionals within their centers than by physicians themselves [30]. In Germany, many physicians cited poor knowledge of "Sports for Health"-accredited programs and limited access to suitable local structures as key barriers to PAP implementation [29]. These findings suggest that interdisciplinary collaboration and task-sharing could ease the burden on GPs and improve patient follow-up.

In France, the implementation of physical activity on prescription is supported by local health-oriented structures such as the "maisons sport-santé", which offer a promising framework to facilitate PAP delivery. However, awareness and accessibility of these centers remain limited [19]. Strengthening collaboration between GPs, trained physical activity professionals, and local networks could enhance both uptake and sustainability. Lessons from international efforts, such as the European Union's EUPAP project [31]—which transferred Sweden's PAP model to nine other countries—underline the importance of embedding PAP within local health systems through policy support, training, and structured referral pathways. Although France was not part of EUPAP, its outcomes may inform national strategies to strengthen the infrastructure and interprofessional coordination needed for widespread and effective PAP integration.

The analysis also showed that doctors' sedentary lifestyle was significantly associated with their prescription of PAP, with a less sedentary lifestyle being associated with a greater frequency of prescription. Similar elements have been observed in other studies, with, for example, less active doctors tending to recommend less physical activity to their patients [32] or overweight/obese doctors feeling uncomfortable recommending physical exercise to their patients, particularly if they themselves do not apply the recommendations of public health authorities [33]. However, contrary to expectations, the personal physical activity levels of doctors in our sample did not appear to directly influence their PAP prescribing behaviour. This discrepancy could suggest that while a less sedentary lifestyle may positively affect awareness or attitudes toward PAP, personal activity levels alone might not be the strongest determinant of prescribing behaviour.

Other factors, such as access to resources, clinical guidelines, or perceived patient receptivity, may play a significant role in influencing PAP prescription. In our sample, proximity to a health and sports facility and the use of prescription aids were both positively associated with prescribing, underlining the importance of practical tools and local infrastructure. This is consistent with the Swedish model of PAP [16], which emphasizes a supportive environment. However, such tools must be part of a broader institutional strategy. Improving training, fostering collaboration with other professionals, and ensuring access and financial aids are key to supporting GPs in promoting physical activity effectively.

While our analysis revealed that factors such as access to a nearby health sports facility, the use of prescription aids, and lower levels of sedentary behaviour significantly influenced whether GPs prescribed PAP, no variables were found to be statistically significant in explaining the frequency of PAP prescriptions. This suggests that while certain factors may determine whether a GP prescribes PAP at all, they do not necessarily explain variations in the frequency of these prescriptions. Future studies should focus on exploring these elements.

The main barriers identified to prescribing PAP were lack of knowledge, the perceived complexity of prescribing, and unfamiliarity with local structures. These results corroborate those of the literature and of previous studies, which have also identified these barriers as important [18, 19, 26, 29, 30].

This study identified multiple barriers to PAP prescription, both quantitatively and qualitatively. Lack of knowledge (77.7% of non-prescribers vs. 48.0% of prescribers), perceived complexity (40.8% vs. 25.3%), and limited awareness of local sports-health structures (80.7% vs. 56.7%) were key deterrents. These findings align with international data; for instance, in Germany, nearly two-thirds of physicians aware of PAP did not use it due to insufficient training, while 50.0% cited a lack of accredited local programs and 40.6% pointed to financial barriers [29].

Beyond these structured responses, 49 free-text comments from GPs provided valuable qualitative insights, highlighting additional barriers such as uncertainty regarding PAP's role in medical practice, financial constraints, and the absence of structured guidelines. Some GPs expressed doubt about whether prescribing physical activity fell within their professional scope, potentially contributing to low prescription rates. Similarly, the German study found that attitude-related barriers, such as skepticism about PAP's effectiveness and perceived patient disinterest, ranked similarly to practical barriers [29].

In France, the structured nature of PAP consultations, requiring motivational interviewing, physical examination, and a written prescription following the FITT model [13, 14], may add to its perceived complexity.

These findings highlight the need for improved physician training, expanded access to accredited PAP programs, and clearer financial reimbursement policies to enhance PAP adoption in routine practice. Further research should explore how healthcare systems can streamline PAP integration, particularly in primary care settings, to reduce structural barriers and promote long-term engagement in physical activity for chronic disease management.

Strengths and limitations

This study has several strengths that contribute to the growing body of knowledge on PAP prescription practices among GPs. While our sample of 383 GPs is substantial within the French context, we acknowledge that it represents only a fraction of the total GP population. GP recruitment in research remains a known challenge, as highlighted in a systematic review [34]. on survey response rates among physicians. Additionally, the recruitment process was progressive and decentralized, with dissemination dependent on the timing and limited engagement of regional professional bodies. This variability may have introduced unintended sampling bias, as participation likely reflected local interest and accessibility. While this approach enabled us to achieve a geographically diverse sample, it limited our ability to control for representativeness. Although the sample size was determined a priori based on standard statistical assumptions, the exploratory nature of this study calls for cautious interpretation of the results. Replication with larger or more systematically selected samples would be valuable to confirm and extend these findings. Nonetheless, despite these constraints, our sample provides meaningful insights into current trends and barriers in PAP prescription among French GPs.

The combination of quantitative data from structured questionnaires with qualitative insights from free-text responses allowed for a more comprehensive understanding of the factors influencing PAP prescription. Moreover, the inclusion of both univariate and multivariate analyses provided a robust examination of the factors associated with the likelihood of prescribing PAP.

However, there are some limitations that should be acknowledged. The cross-sectional design of the study limits the ability to establish causality between the factors identified and PAP prescription behaviours. Additionally, although we identified significant factors influencing whether GPs prescribe PAP, we were unable to find explanatory variables for the frequency of prescriptions, suggesting that other unmeasured factors may play a role.

One such factor could be the underestimation of sedentary behaviour, as self-reported measures appear to be prone to bias. A systematic review found that self-reported sedentary time is, on average, underestimated by approximately 1.74 h/day compared to device-based measures [35]. This discrepancy may have influenced our findings regarding the association between GPs' sedentary behaviour and their likelihood of prescribing PAP.

Sedentary behaviour appears affecting GPs' as well [36]. Furthermore, a cross-sectional study on GPs that included an accelerometer subgroup found that the underestimation of sedentary time varied depending on the context [37]. While the difference was minor on workdays (0.17 h/day, not statistically significant), it was

substantially larger on non-workdays, with an underestimation of 2.67 h/day. These findings highlight the need for future studies to incorporate device-based measurements to enhance the accuracy of sedentary behaviour assessment and better understand its relationship with PAP usage patterns.

The data collection period, although sufficient to achieve the necessary number of responses, may not capture seasonal variations or long-term trends in PAP usage. Finally, despite efforts to achieve a representative sample, this study could be influenced by selection bias, as doctors who are particularly interested in adapted physical activity are more likely to respond to the questionnaire. This could over-represent PAP prescribers among the participants. Another limitation lies in our classification of prescriber status: although 39.1% of respondents self-identified as prescribers, 27 of them reported no prescriptions in the previous month, narrowing the group of recent prescribers to 32.1%. This discrepancy suggests that self-identification alone may not reliably capture actual prescribing behaviour. To obtain a more complete and general view of PAP usage in general practice, future research should consider longitudinal designs, include follow-up clarification questions, or apply multi-criteria definitions. Studies with larger, more diverse samples and complementary qualitative methods will also help strengthen the validity of conclusions and guide policy implementation.

Implications and future directions

Despite the declarative aspect of the cross-sectional design, this study could have implications regarding the integration of PAP into the clinical practice in France Our results, which identified key factors influencing PAP prescription, such as access to sports-health facilities and the use of prescription aids, align with efforts seen in other European countries. For instance, countries like Sweden [38] and the United Kingdom [39] have implemented initiatives to integrate PAP into primary healthcare, leading to increased prescription rates. These efforts involve various strategies such as personalized advice, structured exercise programs, and multidisciplinary interventions [40]. However, similar to our findings, there is a recognized need for equitable access to PAP programs, improved institutional and stakeholder funding, and enhanced inter-professional coordination [10].

Conclusion

PAP remains underutilized in French general practice despite its known health benefits. Key facilitators include GPs' physical activity levels and awareness of local resources, highlighting the need for improved accessibility and promotion. Barriers such as limited training, complex prescribing processes, and low resource awareness suggest targeted interventions in education and system support are needed. Simplifying prescription pathways and enhancing GP engagement could bridge the gap between policy and practice, ensuring wider adoption in primary care.

Supplementary Information

The online version contains supplementary material available at https://doi.org/10.1186/s12875-025-02815-z.

Supplementary Material 1

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Author contributions

DPH, LE and AF contributed equally to the manuscript: Conceptualization, Investigation, Data Curation, Data triangulation, Visualization, Methodology, Project Administration, Writing – Original Draft, and Writing – Review & Editing.

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Data availability

The data that support the findings of this study are available from the corresponding author upon request.

Declarations

Human ethics and consent to participate

This study was a non-interventional, cross-sectional survey conducted among general practitioners in France. It was reviewed and approved by the Ethics Committee of CHU de Saint-Étienne on 27 September 2023 (Approval No: IRBN1232023/CHUSTE, supplementary materials appendix 3). The study complies with Article R1121-2 of the French Public Health Code and Article 226 – 16 of the French Penal Code, which regulate non-interventional research and the protection of personal data. It was conducted in accordance with the Declaration of Helsinki and national ethical standards. Participation in this study was voluntary, and all participants provided informed consent before completing the questionnaire. In addition, this study received approval from the French National Commission on Informatics and Liberties to ensure the confidentiality and security of personal data, thereby complying with legal and regulatory requirements in terms of data protection.

Consent to publish

Not applicable. This study does not include identifiable personal data.

Competing interests

DPH is involved in the development of a free prescription aid for adapted physical activity in France. The other authors have no competing interest.

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