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Prescription and physical activity counseling in primary care

Prescripción y asesoramiento de actividad física en atención primaria

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RESUMEN

La actividad física (AF) se define como cualquier actividad donde exista un movimiento muscular que implique el incremento del consumo de energía por encima del estado basal. Actualmente, es bien reconocido los efectos beneficiosos que tiene la AF en la salud mental y física, así como en la prevención de algunos cánceres y de las enfermedades crónicas no transmisibles. Sin embargo, la prevalencia de AF en el mundo, no alcanza los niveles esperados. La evidencia indica que las intervenciones cortas de orientación en salud son efectivas para aumentar la AF, no obstante, los profesionales responsables de la atención primaria no cuentan con la preparación y/o disposición suficiente para el asesoramiento y prescripción de AF. Por ello, en la última década, los niveles de ejercicio físico de la población no han aumentado significativamente, pese a varias iniciativas para promover la orientación sobre AF en la atención primaria. Por ello, la presente revisión tiene como objetivo resumir las generalidades relacionadas a AF, reconocer su impacto en la salud, y ofrecer recomendaciones para el asesoramiento y prescripción de AF en la población general.

Palabras clave: *Actividad física, prescripción, asesoramiento, atención primaria.*

SUMMARY

Physical activity (PA) is defined as any activity with a muscular movement that implies an increase in energy consumption above the basal state. Currently, the beneficial effects that PA has on mental and physical health, as well as on the prevention of some cancers and non-communicable chronic diseases, are well recognized. However, the prevalence of FA worldwide does not reach the expected levels. The evidence indicates that short health guidance interventions are effective in increasing PA. However, the professionals responsible for primary care do not have sufficient preparation and/or willingness to advise and prescribe PA. For this reason, in the last decade, the levels of

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physical exercise in the population have not increased significantly despite various initiatives to promote guidance on PA in primary care. Thus, the present review aims to summarize the generalities related to PA, recognize its impact on health, and offer recommendations for PA counseling and prescription in the general population.

Keywords: *Physical activity, prescription, counseling, primary care.*

INTRODUCTION

Physical activity (PA) is considered by the United Nations (UN) as an essential right for human development, preventing diseases and promoting healthy lifestyles (1,2). Its counterpart, physical inactivity (PI), represents a risk factor for non-transmittable chronic illness and is considered the primary cause of morbi-mortality worldwide. It is estimated that PI is responsible for 9 % of global mortality, and research indicates that individuals who do not exercise have up to 30 % more probability of dying. Thus, added to the wide distribution, PI is considered nowadays as a pandemic that requires immediate attention (3,4). There is sufficient evidence of the health benefits of PA, which has been associated with a decrease in the risk of developing cardio-metabolic diseases and some types of cancer. Likewise, PA improves mood, prevents cognitive deterioration, and contributes to maintaining an adequate weight (5,6). Thus, PA positively affects physical health and mental, affective, relational, and psychosocial capacities, as well as modifies attitudes toward well-being and facilitates coping with chronic diseases (7). While global strategies have been designed to reduce the prevalence of PI by up to 10 % by the end of 2025 (8), some populations have been affected by a reduction in the opportunities to perform regular PA as a consequence of the intervention of social, environmental or personal factors of each individual. Globally, it has been estimated that 25 % of adults and 4 out of 5 adolescents do not achieve recommended PA levels (9,10). While there are other ways to increase PA, exercise is best (4). According to the UN, sport and PA are strategies that facilitate the 2030 Sustainable Development Goals, as they promote the integration and collaboration of multiple actors, sectors, and communities, improve health, and promote the fundamental values of society such as tolerance, cooperation, and equity (1,2).

Thus, to combat the predominance of PI worldwide, the World Health Organization (WHO) has recommended the design of regulations and state policies to promote PA so that individuals of all ages and abilities can become physically active. In addition, WHO offers specific guidelines on the PA that should be performed at each stage of life (11).

Previous studies have shown that brief health counseling interventions help increase PA in the short term, with some evidence that they can be sustained in the long term (12). However, there are numerous barriers to offering and receiving PA advice in primary care, such as scarce resources and perceived ineffectiveness of advice (13). Thus, over the last decade, population PA levels have not increased significantly despite several initiatives to improve the PA counseling offered in primary care (14). In addition to the above, it has been shown that there is a low prevalence of PA prescription at the primary healthcare level due in part to the limited knowledge of health professionals about physical exercise recommendations (15). Therefore, the present review aims to summarize the generalities related to PA, recognize its impact on health, and offer suggestions for PA counseling and prescribing in the general population.

PHYSICAL ACTIVITY GENERALITIES

Before abording physical activity counseling and prescription in primary attention, it is necessary to specify various definitions. PA refers to voluntary body movements that involve energy consumption higher than the resting state, actions that favor social and environmental interactions (16). It can be done in free time, leisure time, when moving from one place to another, in the work or educational environment, and during household chores, which represent the domains of PA, as seen in Figure 1. PI is defined as the inability to reach the recommended PA levels to maintain a healthy physical condition (17).

The concepts of PA and physical exercise are often confused, even though they have different

meanings. Thus, PA refers to any muscular movement that increases energy expenditure above the basal level. In contrast, physical exercise is a specific form of PA performed planned, structured, and repetitively to maintain or improve one or more dimensions of physical condition (18).

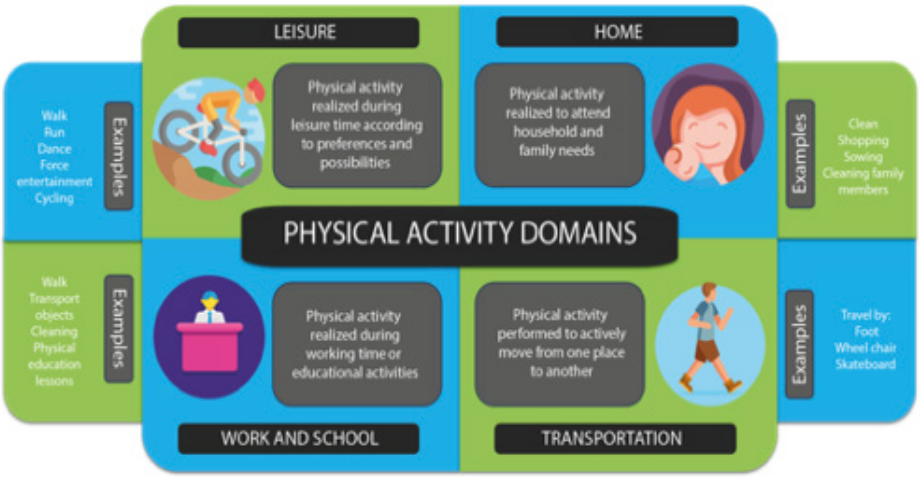

Figure 1. Physical activity domains.

In addition, it is also important to differentiate between the levels of PA intensity (16), taking into account some parameters such as heart rate, respiratory rate, and ability to talk during PA, among others, as seen in Table 1. At this point, it is convenient to define sedentary behaviors as all inactive activities performed in the waking state, where the individual consumes little energy, such as sitting, reclining, or lying. Some examples of these behaviors are texting on a phone, watching television, moving in a car or bus, using a laptop, etc. (16).

Table 1. Physical activity intensity levels.

Intensity	Scale (0-10)	Effort and energy expenditure	Respiratory and heart rate	Talking ability	Perceived exertion index	%HR_{max}	MET
Low	1-4	↑	↑	Can talk and breathe normally	1-2	50-63	<3
Moderate	5-6	↑↑	↑↑	Communication becomes difficult	3-5	64-76	3-5.9
Vigorous	7-10	↑↑↑	↑↑↑	Impossible to have a conversation	6-10	≥77	≥6
%HR_{max}: maximum heart rate percentage (HR_{max}= 200-age); **MET: the metabolic equivalent of task (1 MET = 3,5 ml/kg/min of oxygen consumption)**							

Regarding the physiological component underlying PA, it is known that the adaptive capacity of human skeletal muscle is astounding, as it responds to various external factors, such as the usual degree of contractile load (19). This implies that muscle function and physical performance vary enormously, from sedentary individuals with low endurance and strength to high-level athletes who perform extraordinary feats supported by multifactorial training-induced muscle adaptations (20). This range's cellular and molecular mechanisms regulating muscle plasticity are complex and not yet fully understood. For a better understanding of the molecular and physiological basis on which the indication of PA is based, it is recommended to review the publications by Furrer et al. (21).

Health effects of physical activity

Nowadays, it is universally recognized that PA is capable of reducing mortality rates, preventing some types of cancer, reducing the risk of cardiovascular, metabolic, and musculoskeletal diseases, as well as having a significant impact on mental health. Any form of general PA with no specific intention can also benefit health as long as it is practiced daily (22). Concerning mortality, evidence from multiple cohort studies has shown that physical exercise prevents all-cause mortality in both sexes, with a higher correlation between BP and mortality than between body weight and mortality (23-25).

Scientific studies have shown that PA reduces the risk of colorectal cancer, breast cancer, bladder cancer, endometrial cancer, esophageal cancer, kidney cancer, lung cancer, and stomach cancer, as well as promoting the recovery of these patients (26). Numerous research studies conducted over decades show that exercise also benefits cardiovascular health. Regular physical activity regulates blood pressure, blood sugar, and cholesterol, reducing the risk of stroke (27,28). It likewise helps to combat overweight and impaired glucose metabolism, also known as metabolic syndrome (29,30).

PA has proven benefits for the musculoskeletal system, helping to prevent osteoporosis, reduce fractures, and improve function in patients with rheumatoid and degenerative arthritis (31). Moreover, physical activity is important in relieving musculoskeletal pain and facilitating the recovery of injured patients. Therapeutic exercise is relevant in treating back pain, shoulder impingement syndrome, myopathy syndrome, fibromyalgia syndrome, plantar fasciitis, and ankle sprains (32,33).

PA has a positive impact on an individual's mental health and psychological well-being, helping to prevent and manage psychiatric disorders such as anxiety, stress, insomnia, dementia, and depression (34). According to epidemiological studies, physical exercise is capable of reducing depressive and anxiety symptoms (acute and chronic), decreasing the risk of depression, and improving sleep quality by facilitating its conciliation, reducing nighttime awakenings, increasing deep sleep time, and decreasing daytime sleepiness (35,36). At the same time, it favors cognitive development by enhancing memory, concentration, and learning capacity (37).

The objectives of PA nowadays are no longer focused solely on the loss of body weight but are oriented to induce physical (strength and endurance), metabolic, and anthropometric changes, which can be measured through different methods, among which the use of portable devices seems to be acquiring greater relevance, thanks to their ability to measure clinical parameters such as heart rate, oxygen saturation or the number of steps walked (38,39).

Assessment of physical activity levels in primary care

Recently, it has been recommended that the assessment of PA levels should be included as a vital and periodic element in the physical evaluation of the patient attending primary care. The aim is to determine whether the subject meets the recommended PA level, employing a short questionnaire to assess the number of days per week and the number of minutes per day in which the patient performs moderate to vigorous intensity PA. This questionnaire can be carried out at the same time as the vital signs are assessed. Once PA levels have been determined,

the next step is to evaluate whether the individual is physically fit enough to initiate or modify a PA program safely (40).

Counseling in physical activity: A health strategy underrated

Despite the known health benefits of PA, about 28 % of the world's adult population currently does not engage in physical exercise (10), which translates into a higher prevalence of IP at the global level (11). Thus, in some Latin American countries, physical inactivity can reach rates of up to 39 %, representing a public health problem since this sedentary behavior is associated with a higher risk of developing chronic diseases, with a deterioration of mental health and quality of life (10).

Consequently, health counseling is an important strategy for the first-level healthcare provider, who should encourage the adoption of healthy behaviors (41,42). PA counseling is an educational practice by healthcare personnel to empower people to actively participate in their overall health care through physical exercise and abandoning sedentary behaviors (43,44). This practice respects the individual's autonomy and recognizes their potential, promoting behavioral changes and improving their quality of life (45). Although few epidemiological studies have addressed this issue, it is acknowledged that PA counseling in primary health care in Latin American countries is low, being even lower in high-income countries (46,47).

WHO, the American College of Sports Medicine, and the International Society for Physical Activity and Health have recommended that healthcare providers promote PA through counseling, an inexpensive, easy-to-implement strategy that positively affects PA levels in the population (44,45). Considering that 70 % of the population regularly uses the services provided by primary care, which aims to resolve up to 80 % of all cases that come to health services, physicians at this level should take this opportunity to provide advice or guidance to their patients on PA (42,48,49).

Safety assessment: from advice to physical activity prescription

The evidence indicates that higher doses of PA promote better physical, cognitive, and therapeutic benefits in people (50,51). However, it is important to keep in mind that the greater the amount of physical exercise, the greater the risk of adverse events, which can range from minor musculoskeletal injuries to sudden cardiac arrest (52,53). Although the WHO establishes that authorization by a health professional in most subjects is not required for PA performance (54), a comprehensive risk assessment and health evaluation is essential for individuals with chronic comorbidities.

According to the American College of Sports Medicine, the pre-PA health screening can serve as an initial filter to facilitate the adoption and maintenance of a physically active lifestyle by detecting only those most likely to suffer severe cardiometabolic complications (55). This evaluation protocol is based on three key factors: the current practice of regular moderate PA, the existence of cardiovascular, metabolic, or renal comorbidities, and the presence of disabling symptoms and/or signs (55). The assessment allows patients to be classified into one of six categories. Physician approval of the AP is recommended in categories 2, 3, 5, and 6, so primary care providers should consider referring these patients to specialists for special investigations, whereas, in categories 1 and 4, a comprehensive assessment is not required, as seen in Table 2.

PRESCRIBING PHYSICAL ACTIVITY IN PRIMARY CARE

Promoting PA in the general population is an important objective in the prevention and management of chronic diseases and in maintaining good health. Primary care is well-positioned to promote PA among inactive adults (56). In this regard, general medicine provides more than 300 million patient appointments annually, and primary healthcare teams have a crucial role in motivating patients to

Table 2. Safety categories for physical activity prescription.

Category	Assestment parameter			Activities recommendations
	Regular exercise	Chronic comorbility	Signs & symptoms	
1	No	No	No	PA from low to moderate intensity with high possibilities of advancing to a vigorous PA
2	No	Yes	No	Follow medical authorization. PA from low to moderate intensity with possibilities to becoming a vigorous PA acording to tolerance
3	No	Yes	Yes	
4	Yes	No	No	Continue with moderate to vigorous PA intensity with the possibility of gradual progression
5	Yes	Yes	No	Follow medical authorization. Continue with moderate intensity PA with the possibility of gradual progression
6	Yes	Yes	Yes	Discontinue PA. It could be retaken with medical authorization with a possibility of progressing gradually, according to tolerance

make positive changes in their current BP levels. Prevention as a priority is present in different PA programs globally, highlighting the need to expand the prescription of physical exercise in the population (56).

In this context, once the patient's PA levels have been identified and their capacity for safe physical exercise has been established, the primary care physician can use WHO recommendations to prescribe PA. Thus, the application of the FITT (frequency, intensity, time, and type) PRO strategy is proposed, which breaks down the PA guidelines into five elements that are easier to understand and comply with, such as the frequency, intensity, time, type, and progression of physical exercise, components that can be adaptable to each individual, so that this strategy allows a personalized PA prescription (53,57).

Frequency

The guidelines published by the WHO do not specify the frequency with which aerobic PA should be performed. However, the available evidence indicates that it should be practiced 3 to 7 days a week (54,58). Moderate to vigorous intensity PA is recommended most days of the week. However, some authors have reported that 1 or 2 days of moderate-vigorous PA per week is also associated with beneficial health effects (59).

Intensity

In general, moderate to vigorous intensity PA is recommended for healthy individuals. At the same time, light PA is suggested for those with some limitations, with the possibility of progressively increasing the intensity according to tolerance, since this type of PA is also beneficial for reducing sedentary lifestyles (54,58). It should be noted that extraordinarily high PA intensity may involve risks for some special populations, so it should be done with the support of exercise/ fitness specialists. However, several methods with different advantages and limitations allow the measurement of BP intensity. Among these are devices that measure heart rate, metabolic equivalents (MET), the talk test, or the rated perceived exertion (RPE) (60). The primary care physician should rely on an appropriate method to control the intensity of BP in the individual. Thus, patients who exercise unsupervised can adjust the intensity of their activities to reach their goals without suffering adverse events.

Time

According to WHO guidelines, a total of 150-300 min of moderate-intensity PA or 75-150 min of vigorous-intensity PA (or an equivalent combination) per week should be performed to achieve the beneficial effects of exercise. Another form of aerobic PA dosing is the indication of a certain number of minutes of PA per session or day, with guidelines ranging from ≥30, 30-60, or 40 min/session or day being defined. Regarding anaerobic exercise, several sets, repetitions, and rest times should be prescribed to suit each individual and the type of strength exercise to be performed (60).

Type

Following the WHO guidelines on PA for healthy people and patients with chronic diseases, it is recommended to perform aerobic PA, anaerobic PA (muscle training), and multicomponent PA. Within aerobic PA, we can mention fast walking for at least 10 minutes, cycling, running, and swimming, which can be performed in any PA domain. Resistance training can be accomplished with elastic bands, special machines, dumbbells, or even calisthenics, while multicomponent exercises combine different forms of PA. Primary healthcare providers should consider physical capabilities, comorbidities, contraindications, and individual preferences when indicating any PA type (11,54).

Progression

In this component, it is important to emphasize that the progression of PA frequency, intensity, and time should be continuous but gradual, avoiding sudden or abrupt changes in any of the components of the FITT strategy, as this could increase the risk of harm and adverse events (26,61). Thus, when prescribing PA, primary care physicians should be very emphatic about the importance of a progressive and gradual advance in the components of exercise, which should be framed in a period of 2 to 3 months, where, particularly, the intensity should be increased according to the individual's tolerance (55). Another valid method to apply is the 10 % rule, which states that PA can be progressively increased by adding 10 % per week to each component of the FITT (61). This rule is usually used in swimming, cycling, or track racing. However, it can also be adapted to regular PAs.

PHYSICAL ACTIVITY FOR SPECIAL POPULATIONS

People older than 65 years

By exercising frequently, older adults can obtain health benefits similar to those of other age groups, such as improving quality of life and well-being, sleep, mental health, risk factor control, and disease management. Considering that a higher prevalence of chronic diseases is expected in older adults, it is emphasized that referral to public health units is necessary to obtain more guidance on PA for people with chronic diseases (16). Thus, this population is recommended to perform 150 min/week of moderate PA (walking, dancing, swimming, etc.), or 75 min/week of vigorous PA (running, jumping, pushing, pulling, etc.), or a combination of both with an equivalent duration. In addition, bone- and muscle-strengthening activities should be included at least two times per week, such as jumping, pushing, and pulling, or sports that ensure safety. PA can be done all at once or in short periods, depending on the individual's preference and ability. Older adults who cannot meet the recommended weekly amount of PA should do what they can, always respecting their limits and health. It is advised to take 5-minute breaks every hour while sitting, move around a bit, and avoid a sedentary lifestyle (15,16).

Disabled persons

The participation of people with disabilities in physical activities is highly recommended as long as they are adjusted to their possibilities and capabilities. Both individual and group activities can bring numerous benefits, such as human development, well-being, strengthened social relationships, autonomy for daily activities, relaxation, muscle conditioning, and reduced risk of cognitive impairment. In particular, the guidelines include specific recommendations

for children, youth, adults, and older adults with disabilities, thus tailoring guidance throughout the life cycle (15,16).

- Children and youngsters: According to their individual and environmental capabilities and conditions, it is suggested that children up to 1 year of age perform 30 min/d of early stimulation in a prone position on a suitable surface. Children aged 1 to 2 years should perform three h/d of AP of any intensity. In comparison, children aged 3 to 5 years should perform three h/d of AP of any intensity, with a minimum of 1 h of moderate to vigorous intensity. Children and youth aged 6 to 17 should perform at least 60 min/d of PA, preferably moderate to vigorous intensity, and include bone- and muscle-strengthening activities at least three d/wk.
- Adults and older adults: Depending on their capabilities and individual and environmental conditions, it is recommended that adults perform at least 150 minutes/per week of moderate-intensity physical activity, 75 minutes/per week of vigorous-intensity physical activity, or an equivalent combination of both intensities and include activities that strengthen bones and muscles at least two days/ week. Physical activity can be performed in a single session or short sessions throughout the day. Interrupting each hour of sedentary time with active breaks of 5 minutes at a light intensity is advisable.

Pregnant and postpartum women

Generally, both the woman and the baby benefit from physical activity during pregnancy or postpartum, as it is a safe practice. Physical activity during pregnancy can promote relaxation, adjustment to daily activities, relief of back pain, control of body weight, and prevention of high blood pressure, gestational diabetes, and depression. For babies, mothers' physical activity during pregnancy is associated with a lower risk of preterm birth and helps normal birth weight (15,16). Pregnant and puerperal women without contraindications should follow these recommendations:

- Perform at least 150 minutes per week of PA at moderate intensity, such as walking, swimming, or dancing.
- If they were physically active before pregnancy, they can perform at least 75 minutes per week of PA at a vigorous intensity, such as running, jumping, or aerobics.
- They can also combine moderate and vigorous activities to meet the recommended amount of PA per week.
- PA can be performed at once or fractionated for at least 10 minutes.
- Do pelvic floor exercises to prevent or treat urinary incontinence and genital prolapse.
- Avoid activities with a risk of physical collision with other people or that cause increased abdominal pressure, such as contact sports, heavy lifting, or sit-ups.
- If they cannot reach the recommended weekly amount of PA, adapt it to their capabilities and preferences as much as possible.
- Every hour while sitting, take 5-minute breaks at a light intensity, such as standing up, stretching, or going to the bathroom.

CONCLUSIONS

PA is a beneficial strategy for the prevention of chronic diseases and the maintenance of health. Despite this, there is a high prevalence of sedentary behaviors globally, with the lack of PA counseling and prescription at the primary care level being one of the leading causes of the IP pandemic. In this narrative review, a comprehensive guideline for PA counseling and prescription in the general population was presented, highlighting the benefits of PA on the mental and physical health of individuals. It also offered tools for assessing the safety and dosage of PA on an individualized basis. These recommendations, mainly aimed at primary care physicians, are expected to increase PA levels in the world population.

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