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Review

ACTIVIDAD FÍSICA EN LAS CHICAS ADOLESCENTES Y LOS FACTORES RELACIONADOS: UNA REVISIÓN DE ALCANCE

PHYSICAL ACTIVITY AMONG ADOLESCENT GIRLS AND THE FACTORS LINKED TO IT: A SCOPING REVIEW

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RESUMEN

Los bajos niveles de actividad física en los países occidentales es uno de los mayores problemas de salud pública del siglo XXI, y el problema es especialmente grave en las chicas adolescentes, en detrimento de su salud y aumentando las desigualdades sociales. El objetivo fue identificar los factores relacionados con el inicio, mantenimiento y abandono de la actividad física en las chicas adolescentes. Se realizó una revisión de alcance de la literatura en las bases de datos PubMed, CINAHL, Cochrane Library, SCOPUS y Web of Science. Se incluyeron en la búsqueda estudios publicados entre el 2006 y el 2020 y las palabras clave utilizadas fueron Adolescent girls, Physical activity, Experience y el operador booleano AND. Los estudios reflejaron factores psicosociales, percepciones o experiencias de las adolescentes vinculadas a la actividad física. Se incluyeron investigaciones cuantitativas y cualitativas de cualquier disciplina. Se seleccionaron cuarenta y dos estudios. Utilizando el modelo de promoción de la salud para evaluar los resultados, concluimos que la percepción de las barreras y los factores situacionales son las principales razones de los bajos niveles de actividad física. La autoeficacia percibida, el afecto positivo ligado a la actividad y el entorno físico y social son claves para iniciar y mantener la actividad física. Estos factores deben tenerse en cuenta al diseñar planes de promoción de la salud que apunten a aumentar la actividad física en las adolescentes.

Palabras clave: Adolescente, mujeres, ejercicio físico, conductas relacionadas con la salud, promoción de la salud, género y salud.

ABSTRACT

The low level of physical activity in Western countries is one of the major public health problems of the 21st century, and the problem is especially dire among adolescent girls, worsens their health and increases social inequality. The objective was to identify the factors linked to the initiation, maintenance, and abandonment of physical activity among adolescent girls. A scoping review of the literature was conducted in PubMed, CINAHL, Cochrane Library, SCOPUS and Web of Science databases. Studies published 2006–2020 were included in the search and the keywords used were Adolescent girls, Physical activity, Experience and the boolean operator AND. The studies reflected psychosocial factors, perceptions, or experiences of adolescent girls linked to physical activity. Both quantitative and qualitative research from any discipline were included. Forty-two studies were selected. Using Pender's health promotion model to evaluate the results, we conclude that perception of barriers and situational factors are the main reasons for low levels of physical activity. Perceived self-efficacy, positive affect linked to the activity, and the physical and social environment are the key to starting and maintaining physical activity. These factors should be kept in mind in designing health promotion plans that aim to increase physical activity in adolescent girls.

Keywords: Adolescent, women, exercise, health behaviour, health promotion, gender and health.



INTRODUCTION

Lifestyle behaviours that people establish in adolescence can continue into adulthood, protecting their health or potentially becoming serious health problems. Among the most common risky behaviours in adolescence detailed by the World Health Organisation (WHO) are unprotected sex, tobacco use, unhealthy eating, and insufficient physical activity (World Health Organization, 2021). Recently, the WHO reported that 80% of school-age adolescents around the world do not reach the recommended level of physical activity (85% in girls and 78% in boys) (Guthold et al., 2019). This public health problem, which has become aggravated for girls, puts them at a clear disadvantage, due to the impact of the lack of activity on physical health, socialisation, and cognitive development (Guthold et al., 2019). Physical activity, well-being, and gender equality are key issues in the United Nations' Sustainable Development Goals (SDS), and they must be addressed in research (United Nations, 2021). The WHO's 2030 global action plan establishes the goal of reducing physical inactivity in the world's population by 15% (World Health Organization, 2018).

The WHO recommends that adolescents undertake 60 minutes of physical activity per day, with three days of vigorous activity and the remaining days moderate (World Health Organization, 2020). This practice carries physical benefits such as the proper development of musculoskeletal, cardiovascular, cardiorespiratory, metabolic, and neurological systems (World Health Organization, 2020; Physical Activity Guidelines Advisory Committee, 2018). Exercise also provides psychological well-being, improving self-esteem, mood, sleep, stress, anxiety, and depression (Mcdowell, 2017). In the social sphere, physical activity provides opportunities for interaction with others, and also promotes healthier behaviours, such as avoiding drugs and alcohol (World Health Organization, 2020). Sports practice in adolescence is a better predictor of physical activity in adulthood than education level or economic status (Eime, 2016).

In the last decade, researchers have begun examining how political and social factors relate to health inequalities (Thomas, 2009; Dahlgren & Whitehead, 2007). Socioeconomic and cultural disadvantages

affect women more than men at all life stage, leading women and girls to have poorer health and quality of life, and thus deepening gender inequalities (Rootman et al., 2001). For this reason, it is important to understand health factors from the point of view of gender so that effective health-promotion interventions can be designed (Velasco, 2009). In its global action plan on physical activity, the WHO notes that measures to promote and increase physical activity in the population can contribute to the emancipation of women and girls (World Health Organization, 2018).

An influential model in understanding the factors linked to the adoption of healthy behaviours is Pender's health promotion model (Pender et al., 1988), which has been validated in numerous studies (Pender et al., 1988; Pender et al. 1990; Wu & Pender, 2005; Shin et al., 2015; Voskuil et al., 2019). Pender's health promotion model serves as a guide that allows us to understand complex biopsychosocial processes that motivate adolescent girls to become involved—or not—in physical activity (Srof & Velsor-Friedrich, 2006). The model takes into account multiple factors that are associated with physical activity: perception of barriers, perception of benefits, perception of self-efficacy, activity-related affect, interpersonal influences, and situational influences (Table 1) (Wu, et al., 2003). For this reason, it is useful for planning and evaluating health promotion activities (Gil -Girbau et al., 2019).

Table 1. Pender's cognitive and emotional factors in health behaviours.

Perception of barriers	of	Negative mental representations, such as seeing difficulties or believing that one is unsuited for an activity.
Perception of benefits	of	Positive mental representations, such as motivation and the expectation of positive results
Perception of self-efficacy		The person's judgment that he or she can undertake physical activity, using his or her own resources and skills
Activity-related affect		The feelings or sensations that a person experiences before, while or after carrying out a physical activity
Interpersonal		Perceptions of the beliefs, attitudes and behaviours of others that are linked to



influences	engagement in physical activity
Situational influences	Perceptions of the context or surroundings that are linked to engagement in physical activity

This scoping review aims to identify the factors linked to the initiation, maintenance, and abandonment of physical activity among adolescent girls. The motivation for this study was to understand the reasons for low levels of physical activity in adolescent girls. A qualitative perspective was used to analyse published studies from around the world from a range of health fields, in order to understand adolescent girls' experiences of physical activity.

Scoping reviews are an ideal tool to determine the scope or coverage of a body of literature on a given topic and give clear indication of the volume of literature and studies available as well as an overview of its focus. Scoping reviews are useful for examining emerging evidence when it is still unclear what other, more specific questions can be posed and valuably addressed by a more precise systematic review (Armstrong et al., 2011). They can report on the types of evidence that address and inform practice in the field and the way the research has been conducted (Arksey & O'Malley, 2005; Munn et al., 2018). Moving beyond previous reviews, this analysis of the literature aims to offer conclusions about how to design interventions to increase physical activity in adolescent girls. This review is not limited to the health sector, because, as signalled in the 2016 Shanghai Declaration, health must be promoted across a range of contexts (World Health Organization, 2021). The intention is for this review to serve as a guide on possible conditioning factors, which will make it possible to design more effective physical activity interventions created jointly by health institutes, public administrations, primary care and community-based networks.

METHODS

A scoping review search was conducted to identify and map the use and discussion of certain concepts across the available literature (Arksey & O'Malley, 2005; Munn et al., 2018). Following the PRISMA guidelines for scoping reviews has helped ensure rigor in identifying the problem, searching for

literature, evaluating the literature, analysing the data, synthesising evidence, and assessing the scope of literature on the topic (Tricco et al., 2018).

Eligibility criteria

The initial search criteria were articles addressing psychosocial factors, perceptions or experiences of adolescent girls linked to physical activity. Quantitative and qualitative research and reviews from any discipline were included. The search languages were Catalan, Spanish, and English. The review covers research published between January 2006 and December 2020. This search period was chosen because as of 2006, research with a gender perspective in physical activity in adolescence has increased. It included studies published between January 2006 and December 2020 in Catalan, Spanish or English that focused on the psychosocial factors linked to physical activity in adolescent girls. Studies about physical activity in adolescent girls with a specific health problem, studies that did not differentiate between boys and girls, and studies that did not differentiate outcomes by life stage were excluded.

Databases

To construct the sample, the following databases were used: MEDLINE/PubMed, CINAHL, Cochrane Library, SCOPUS and Web of Science. The keywords used were 'adolescent girls', 'physical activity', and 'experience'. 'Experience' guided the search to have a psychosocial vision of the situation. We used 'AND' as a Boolean operator to connect concepts. MeSH search terms were not used because it was noticed that a MeSH search failed to capture numerous relevant articles. The same happened when trying to use other words, such as 'sport' or 'exercise'.

Data charting process and data items

A constant evaluation of the articles was conducted, to ensure that the articles analysed were in line with the study aims. This process involved two researchers. PRISMA establishes an evidence-based minimum set of items to help authors improve the reporting of scoping reviews, systematic reviews, and meta-analysis (PRISMA, 2021). Pender's health promotion model was used to categorise the results



for all article types. This approach allowed to evaluate the extent to which the existing research addresses the key factors for health promotion related to health behaviours (Table 1).

Critical appraisal and synthesis of results

All articles were published in indexed journals. Because the focus was adolescent girls' experiences with physical activity, articles whose title and abstract addressed this issue were chosen. After this initial selection, articles were thoroughly reviewed and those that didn't meet the inclusion criteria were eliminated. Later, each article was analysed with the Critical Appraisal Tools (CASP) of the Joanna Briggs Institute, which helped determine the viability of including each article in the sample (CASP, 2018). The CASP approach was chosen because it makes it possible to evaluate different types of articles (CASP, 2018). This system for measuring the quality of the articles and of the review itself was carried out by two team members.

RESULTS

The flow diagram in Figure 1 shows the number of articles screened, the number of articles assessed for eligibility, and the number of articles included in the review, with reasons for exclusion at each stage. All the studies have as their main objective to examine physical activity of adolescents and the related psychosocial factors. All articles included in the final review are summarised (Table 2). A qualitative method for categorising concepts was used in the table. Findings are described in this article based on the key factors according to Pender's health promotion model.

Perceived barriers

Twelve of the studies paid attention to perceived barriers to physical activity. The perception of barriers and situational factors are the factors most strongly linked to low rates of physical activity among adolescent girls (Borhani et al., 2017). The barriers to physical activity perceived by women originate in adolescence and are perpetuated over the lifespan (Sindik et al., 2016). Physical appearance, and in particular dissatisfaction with their bodies, is the main barrier identified in several studies (Craike et al., 2016; Standiford, 2013; Vu et al., 2006) and is associated directly with a low level of physical activity in a comparison of metropolitan and non-metropolitan areas (Craike et al., 2016). Body ideals lead inactive adolescent girls to believe that their bodies are not capable of being athletic (Kinsman et al., 2015; Brooks & Magnusson, 2006), and one study shows that inactive girls believe that physical activity is reserved for fit girls (Yungblut et al., 2012). Some girls avoid physical activity with their peers because they fear not being fit enough and being a burden (Van Kessel et al., 2016). One study shows that girls sometimes offer excuses to avoid joining in physical activity with peers, such as saying they have their period (Brooks & Magnusson, 2006). In contrast, several studies suggest that active adolescent girls hold fewer negative stereotypes about their appearance than inactive girls (Yungblut et al., 2012; Coleman et al., 2008). Another barrier is the time necessary for performing physical activity, which in one study is described as difficult to combine with school, part-time-work and other obligations (Romero-Blanco et al., 2020). Other barriers include the fear of getting hurt, bad weather,

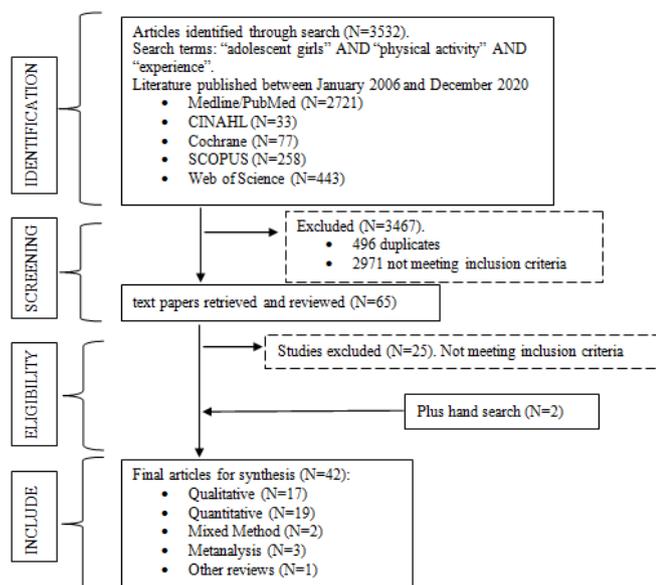


Figure 1. PRISMA flow diagram of the search process



lack of transportation, lack of economic resources, limited resources (Van Kessel et al., 2016; Coleman et al., 2008) and the lack of opportunities to compete (Eime et al., 2016; Yungblut et al., 2012). Finally, some studies report that girls see the barriers to physical activity as outweighing its potential benefits (Vu et al., 2006; Kinsman et al., 2015).

Perceived benefits

Seven studies explored perceived benefits. One study shows that adolescent girls see physical activity as beneficial for health (Romero-Blanco et al., 2020), but this isn't the main factor that motivates them. Other studies show motivating factors: the stereotype of the attractive, fit body (Van Kessel et al., 2016) and/or the goal of losing weight (Vu et al., 2006). Among the benefits of exercise, teenage girls find that doing sports with friends gives them the opportunity to socialise (Standiford, 2013; Yungblut et al., 2012; Van Kessel et al., 2016). Other elements they perceive as benefits are their self-perception of their body—such as being athletic or feeling good enough (Brooks & Magnusson, 2006) - improvement in academic performance, and better health (Shannon, 2016).

Perception of self-efficacy

Ten studies examined the association between self-efficacy and physical activity. Shannon (2016) finds that female adolescent competitive dancers kept dancing because it supported three needs: autonomy, a feeling of competence, and relationships. The first two of these needs are directly related to the girls' perception of self-efficacy. Borhani et al. (2017) find that perception of self-efficacy is the most influential factor in whether adolescent girls engage in physical activity and argue that interventions should attempt to improve it. Similarly, Voskuil and Robbins (2015) show that perceived self-efficacy is linked to urban adolescent girls' decision to perform physical activity even in the face of barriers. Yungblut et al., (2012) suggest that girls need to perceive they are capable and are working on their physical identity to achieve positive images of their abilities, motivations, and personal choices in relation to sports. For adolescent girls' adoption of physical activity to be lasting, and therefore for them to continue benefiting from it, it must be of moderate-to-vigorous intensity, because it makes them feel capable and effective (Kidokoro et

al, 2016; Gao et al., 2020). Other studies suggest that it is necessary to develop messages that empower girls (Hosseini et al., 2013), carry out interventions inside the community that increase their self-confidence in practicing sports (Brooks & Magnusson, 2006), and develop programmes that encourage participation (Wieland et al., 2020).

Activity-related affect

Activity-related affect appeared in nine studies of the review. Consistent exposure to supportive social and physical environments for physical activity enjoyment, increases the likelihood that girls maintain physical activity beyond adolescence. Environmental-level strategies can foster long-term physical activity enjoyment because they tend to be present in girls' lives long-term (Fu et al., 2022). Shannon (2016) highlights the importance of enjoyment, pleasure, and the ability to compete, regardless of the outcome, while Van Kessel et al. (2016) point to the ability to experience physical activity with friends. Yungblut et al. (2012) find that active girls do not allow competition and stereotypes to affect their enjoyment of physical activity. In addition to the link between friendship and physical activity, the family, the school environment, and the physical surroundings are also linked to girls' enjoyment of physical activity (Fu et al., 2022; Kudlacek et al., 2020; Budd et al., 2018). According to Brooks and Magnusson (2006), effort should be emphasised over victory. To support positive affect, a secondary factor linked to physical activity, several authors propose non-competitive physical activity that promotes cooperation and community spirit among adolescent girls (Standiford, 2013; Robbins et al., 2016).

Interpersonal influences

Twenty-four studies explored the relationship between interpersonal factors and physical activity. Social and cultural contexts are linked to adolescent girls' physical activity, in terms of both behaviour and experience (Yungblut et al., 2012). Girls' personal surroundings can inhibit their physical activity (Pearson et al., 2015), but they can also spur greater physical activity (Romero-Blanco et al., 2020; Laird et al., 2016).



During adolescence, parents tend to move to the backstage as friends take on increasing importance, but Laird et al. (2016) suggest that in the case of physical activity, parents are as important a factor as friends. Parents' attitudes and their provision of tangible and intangible resources to support their daughters' physical activities are linked to girls' developing an interest in physical activity (Hosseini et al., 2013; Lawler et al., 2020). Similarly, another study shows that a greater proportion of girls with parental support participated in sports than girls without parental support (Guagliano et al., 2014). Other studies show greater participation in physical activity among girls that have a physically active friends (Coleman et al., 2006; Fu et al., 2022; Lawler et al., 2020) or a physically active mother (Eime et al., 2016). Laird et al. (2016) shows that girls consider physical activity with friends to be a leisure activity, while they view physical activity with their parents as a health activity. It seems essential to encourage parents to become involved in their adolescent daughters' physical activities (Kinsman et al., 2015) and support adolescent girls' physical activities as much as they support boys' (Morrissey et al., 2015), especially mothers (Benitez et al., 2020).

Although it seems easier for boys to continue engaging in physical activity because males' physical activity is reflected in sociocultural patterns, the role of the family, society and the community are also factors that contribute to facilitating the commitment of adolescent girls to physical activity (Eime et al., 2016). Similarly, Standiford's (2013) study shows that girls were affected by gender norms surrounding physical activity and the lack of girls' sports teams in their communities. Depper and Howe (2016) show that images of fashion models and supra-athletic bodies were discouraging because girls found them to be unattainable (Depper & Howe, 2015). The lack of cultural competencies can impede physical activity (Kinsman et al., 2015; Araki et al., 2013).

Gender, as a social factor in health, is emerging as a conditioning factor in the practice of physical activity in adolescent girls (Lawler et al., 2020; Araki et al., 2013). Metcalfe (2018) reveals a binary idea of masculinity and femininity with respect to physical activity and sports in adolescents, in which girls believe that they have to behave within gendered social constructs (Metcalfe, 2018). Lopez (2019)

shows that women are associated with delicateness and ignorance of sports rules and are sometimes mocked when they attempt to engage in physical activity (Lopez et al., 2019). She also shows that adolescent girls who engage in physical activity report that they have to overcome these stereotypes to enjoy physical activity. Interventions related to gender in sports that include both adolescent boys and girls give adolescent boys the opportunity to learn directly about girls' experiences surrounding physical activity (Gonzalez-Serrano et al., 2020).

The experience of physical education in primary and secondary school is also a key factor, given that if adolescent girls have negative experiences of physical education, later they do not participate in physical activities in the community (Brooks & Magnusson, 2006). Eime et al. (2016) show that these activities in the community are key to greater adherence to and maintenance of physical activity over time. Vu et al. (2006) demonstrate that the family is the main factor motivating girls to remain active, while, according to Robbins et al. (2016), school is the ideal place for promoting physical activity. Assessments of interventions performed at schools show that the variety and choice of activities by adolescent girls help to improve their commitment to the practice (Sánchez-Hernández et al., 2018; McNamee et al., 2016). Lamb et al. (2018) suggest that relationships with classmates and teachers are key to motivation. Starting from an increase in moderate-to-vigorous physical activity that these interventions promote, adolescent girls experience an increased sense of self-efficacy (Laird et al., 2016).

Situational influences

Ten studies examined various situational factors that are associated with adolescent girls' decisions regarding initiation, maintenance, and cessation of physical activity. Girls' physical surroundings are a determining factor. The probability of physical activity is higher in places where there are parks and schools, and, in contrast, it is lower in commercial areas (Lamb et al., 2018), but women use parks less than men in high-poverty neighbourhoods (Rodríguez et al., 2011). Unfavourable socioeconomic situations are also linked to lower levels of physical activity in adolescent girls (Derose et al., 2018). Adolescent girls look for places that are accessible and above all, safe (Standiford, 2013;



Casey et al., 2014). Adolescent girls also demand more infrastructures for performing physical activity (Kinsman et al., 2015), such as sports facilities with pleasant changing rooms and time for showering (Brooks & Magnusson, 2006; Yungblut et al., 2012). Shannon (2016) shows that girls prefer sport centres that have areas for doing homework, flexibility in participation, an environment that supports academics, opportunities for expression and creativity, and variety in physical activities. One of the most innovative currents for increasing physical activity among adolescent girls is using active transportation, especially on the way to school (Hermosillo-Gallardo et al., 2020). Walking is well received among adolescent girls as a physical activity. This action, carried out in a facilitating environment, is a resource that improves the ability of adolescent girls to maintain physical activity (Sauvage-Mar et al., 2019).



Table 2. Data extraction of reviewed studies

Authors (year)	Country	Article	Type of key factor	Design	Participants	Contribution to the review
Araki K, Kodani I, Gupta N, Gill DL. (2013).	Japan	Experiences in sport, physical activity, and physical education among Christian, Buddhist, and Hindu Asian adolescent girls	Interpersonal influences	Qualitative study with a phenomenological focus	Adolescent girls (14 -15 years)	Demonstrates the need to work on cultural competencies in order to carry out interventions to encourage adolescent girls to be more active
Benitez TJ, Cano M, Marquez B, Larsen B. (2020)	United States	Assessing Maternal Support for Physical Activity in Latina Adolescents	Interpersonal influences	Cross-sectional descriptive study	Adolescent girls (12 – 18 years) and mothers	There are differences between mothers' behaviours that they perceive as supportive of daughters' physical activity and daughters' perception of the support received
Borhani M, Sadeghi R, Shojaeizadeh D, Harandi T, Vakili M (2017)	Iran	Teenage girls' experience of the determinants of physical activity promotion: A theory-based qualitative content analysis	Barriers Situational influences Self-efficacy	Qualitative content analysis, based on discussion groups and in-depth semi-structured interviews	Adolescent girls (12 – 18 years) and teachers	Signals that the perception of barriers and situational influences are the primary factors in the low level of physical activity in adolescent girls. A good degree of perceived self-efficacy promotes physical activity
Brooks F, Magnusson J. (2006)	United Kingdom	Taking part counts: adolescents' experiences of the transition from inactivity to active participation in school-based physical education	Barriers Benefits Self-efficacy Activity-related affect Interpersonal influences	Qualitative, phenomenological study, focus groups	Adolescent girls and boys (14 – 15 years)	Establishes that inactive adolescent girls who become active experience increased self-confidence and better social skills. Moreover, they value effort and perseverance over sporting triumphs. It is important to them that the places where they engage in physical activity are pleasant
Budd EL, McQueen A, Eyler AA, Haire-Joshu D, Auslander WF, Brownson RC. (2018)	United States	The role of physical activity enjoyment in the pathways from the social and physical environments to physical activity of early adolescent girls	Activity-related affect	Cross-sectional descriptive study	Adolescent girls (10 – 14 years)	Highlights the importance of enjoyment in the maintenance of physical activity
Carlin A, Murphy MH, Gallagher AM. (2019)	United Kingdom	Using the school environment to promote walking amongst adolescent females: a	Situational influences	Mixed-methods study	Adolescent girls (11 – 14 years)	Describes the positives noted by adolescent girls who have participated in an intervention to increase physical activity through walking



Casey MM, Harvey JT, Telford A, Eime RM, Mooney A, Payne WR. (2014)	Australia	mixed-method study Effectiveness of a school-community linked program on physical activity levels and health-related quality of life for adolescent girls	Situational influences	Quantitative research, randomized controlled trial	Adolescent girls (12 – 14 years)	Highlights the importance of interventions in different contexts, especially involving family and community, because they are the spaces where teenage girls spend their free time
Coleman L, Cox L, Roker. (2008)	United Kingdom	Girls and young women's participation in physical activity: psychological and social influences	Barriers Interpersonal influences	Qualitative, phenomenological study	Adolescent girls (15-19 years)	Explains the importance of knowing the factors that encourage adolescent girls to initiate and maintain physical activity and the factors that discourage them from doing so. Argues that the experience of both active and inactive teenage girls needs to be examined
Craike M, Young JA, Symons CM, Pain MD, Harvey JT, Eime RM, et al. (2016)	Australia	Trends in body image of adolescent females in metropolitan and non-metropolitan regions: a longitudinal study	Barriers	Longitudinal descriptive observational study. Survey of 732 adolescents, two cohorts over 3 years	Adolescent girls (11 – 18 years)	Shows that dissatisfaction with their bodies is the main barrier to physical activity identified by adolescent girls
Depper A, Howe P. (2016)	United Kingdom	Are we fit yet? English adolescent girls' experiences of health and fitness apps	Interpersonal influences	Qualitative, phenomenological study	Adolescent girls (14-17 years)	Establishes that apps can motivate individual physical activity, but that they can also limit the social and interactive elements of shared, in-person physical activity that girls value
Derose, K. P. et al. (2018)	United States	Gender disparities in park use and physical activity among residents of high-poverty neighborhoods in Los Angeles.	Situational influences	Quantitative research, randomized controlled trial	Adolescents, women, and men (18 – 60 years)	Shows that adolescent girls and women living in high-poverty neighbourhoods use parks less for physical activity than men
Eime RM, Harvey JT, Sawyer NA, Craike MJ, Symons CM, Payne WR. (2016)	Australia	Changes in sport and physical activity participation for adolescent females: a longitudinal study	Barriers Interpersonal influences	Descriptive quantitative study. Survey of 729 adolescent girls	Adolescent girls (12-18 years)	Shows that girls stick with physical activity more if they perform it outside of school and with people close to them, especially mothers. Sports practice in adolescence is a better predictor of physical activity in adulthood than education or socioeconomic status
Fu Y, Bums R, Zhang P, Hsu YW, Constantino N.	United States	Motivation, segmented physical activity,	Self-efficacy Affect	Quantitative path analysis	Adolescent girls and boys (12-18)	Shows enjoyment, self-efficacy, and peer social support as motivational



(2020)		sedentary behaviour, and weight status in adolescents: a path analysis	Interpersonal		years)	variables to physical activity
Gao L, Gan Y, Lippke S. (2020)	Germany	Multiple health behaviors across age: Physical activity and internet use	Self-efficacy	Descriptive quantitative study	Adolescent girls and boys (17-20 years)	Shows that increase self-efficacy is key to adopting and maintaining physical activity.
Gonzalez-Serrano MH, Gomez-Tafalla A, Calabuig-Moreno F. (2020)	Spain	Predictive variables of adolescents' intention to be physically active after graduation. Is gender a conditioning factor?	Interpersonal	Quantitative cross-sectional study	Adolescent girls and boys (16-18 years)	Shows gender differences related to the intention to practice physical activity
Guagliano JM, Lonsdale C, Rosenkranz RR, Kolt GS, George ES. (2014)	Australia	Do coaches perceive themselves as influential on physical activity for girls in organised youth sport?	Interpersonal influences	Qualitative, phenomenological study	Coaches of adolescent girls aged 9-17 years.	Shows the difference in involvement in physical activity of girls who do and don't receive parental support
Hermosillo-Navarro ME, Sebire SJ, Jago R. (2020)	Mexico	Perception of safety and its association with physical activity in adolescents in Mexico	Situational	Quantitative cross-sectional study	Adolescent girls and boys (15-18 years)	Shows perception of safety is negatively associated with physical activity and sports participation in female adolescents. Environments with better lighting, crosswalks, walking trails, and signals on busy streets could increase female adolescents' physical activity and sports participation.
Hosseini SV, Anoosheh M, Abbaszadeh A, Ehsani M. (2013)	Iran	Qualitative Iranian study of parents' roles in adolescent girls' physical activity habit development	Self-efficacy Interpersonal influences	Qualitative analytical study	Adolescent girls (10-19 years), fathers and mothers	Explains the need for nurses, who serve a role as promoters of health, to promote physical activity in adolescent girls through the family. Demonstrates how important it is for adolescent girls that their families reinforce their physical activity
Kinsman J, Norris SA, Kahn K, Twine R, Riggle K, Edin K, et al. (2015)	South Africa	A model for promoting physical activity among rural South African adolescent girls	Barriers Interpersonal influences Situational influences	Qualitative study using hermeneutic phenomenology. Discussion groups and in-depth interviews	Adolescent girls (13-19 years), teachers and figures related to sports	Highlights the importance of providing material resources and empowerment to adolescent girls who come from disadvantaged groups to increase their physical activity



Kidokoro T, Tanaka H, Naoi K, Ueno K, Yanaoka T. (2016)	Japan	Sex-specific associations of moderate and vigorous physical activity with physical fitness in adolescents	Perception of self-efficacy	Descriptive quantitative study	Adolescent girls and boys (12-14 years)	Recommends specific interventions for adolescent boys and adolescent girls
Kudlacek M, Fromel K, Groffik D. (2020)	Czech Republic and Poland	Associations between adolescents' preference for fitness activities and achieving the recommended weekly level of physical activity	Affect	Longitudinal descriptive observational study	Adolescent girls and boys (15-18 years)	Shows adolescents preferring fitness and organized physical activity. When promoting adolescents' physical activity, it is necessary to consider preferred physical activity types.
Laird Y, Fawcner S, Kelly P, McNamee L, Niven A. (2016)	United Kingdom	The role of social support on physical activity behavior in adolescent girls: a systematic review and meta-analysis	Interpersonal influences	Meta-analysis	Adolescent girls	Establishes the degree of influence that family and friends have in physical activity among adolescent girls, who view exercise as a leisure activity when conducted with friends and a health activity when conducted with family
Lamb CA, Oliver KL, Kirk D. (2018)	United Kingdom	'Go for it Girl' adolescent girls' responses to the implementation of an activist approach in a core physical education programme	Interpersonal influences	Qualitative, phenomenological study	Adolescent girls (13-14 years)	Describes the responses of a group of adolescent girls who have completed a physical education program in schools to improve the experience of physical activity
Lawler M, Heary C, Nixon E. (2020)	Ireland	Peer support and role modelling predict physical activity change among adolescents over twelve months	Interpersonal Situational	Longitudinal descriptive observational study	Adolescent girls and boys (12-14 years)	Shows that peer processes predict physical activity maintenance, initiation, and drop-off at one-year follow-up underscoring the salient role of peers for adolescents' behaviour change. Mother's and father's support predicted sustained physical activity participation twelve months later
Lopez V. (2019)	United States	No Latina girls allowed: gender-based teasing within school sports and physical activity contexts	Interpersonal influences	Qualitative, phenomenological study	Adolescent girls (12 – 15 years)	Claims that teenage girls who play sports have to break stereotypes and overcome discomfort in order to enjoy sports
McNamee J, Timken G, Coste S, Tompkins T, Peterson J. (2016)	United States	Adolescent girls' physical activity, fitness and psychological well-	Interpersonal influences	Quantitative, quasi-experimental study	Adolescent girls (12-15 years)	Demonstrates increased practice of moderate-vigorous physical activity in adolescent girls through a program



		being during a health club physical education approach				developed by the school
Metcalfe S. (2018)	United Kingdom	Adolescent constructions of gendered identities: the role of sport and (physical) education	Interpersonal influences	Mixed-methods study	Adolescent girls and boys (15-16 years)	Identifies the influence of the social construction of gender, building on the identities of adolescent boys and girls, in their physical education and in sports
Morrissey JL, Janz KF, Letuchy EM, Francis SL, Levy SM. (2015)	United States	The effect of family and friend support on physical activity through adolescence: a longitudinal study	Interpersonal influences	Longitudinal descriptive observational study	Adolescent girls and boys (13-17 years)	Studies the effect of family support and friendships on physical activity in adolescent boys and girls, and the differences between the two groups
Pearson N, Braithwaite R, H Biddle SJ. (2015)	Australia	The effectiveness of interventions to increase physical activity among adolescent girls: a meta-analysis	Interpersonal influences	Meta-analysis	Adolescent girls (12-18 years)	Stresses the importance of investigating effective interventions at the community level. Claims that adolescent behaviour with respect to physical activity is modifiable, although change is difficult
Robbins LB, Ling J, Toruner EK, Bourne KA, Pfeiffer KA. (2016)	United States	Examining reach, dose, and fidelity of the 'Girls on the Move' after-school physical activity club: a process evaluation	Activity-related affect Interpersonal influences	Quantitative case-control study	Adolescent girls (10-14 years) and coaches	Promotes the design of multi-component interventions. The school is the nexus, but external incentives, facilitators from the girls' personal environment, and situational facilitators are necessary
Rodríguez DA, Cho G-H, Evenson KR, Conway TL, Cohen D, Ghosh-Dastidar B, et al. (2011)	United Kingdom	Out and about: association of the built environment with physical activity behaviors of adolescent females	Situational influences	Descriptive quantitative study	Adolescent girls (15-18 years)	Demonstrates that rates of physical activity are linked to population density and proximity to natural spaces and schools
Romero-Blanco C, Dorado-Suarez A, Jiménez Zazo F, Castro-Lemus N, Aznar S. (2020)	Spain	School and family environment is positively associated with extracurricular physical activity practice among 8 to 16 year old school boys and girls	Benefits Interpersonal	Descriptive quantitative study	Adolescent girls and boys (8-16 years)	Relationship is observed between families where another family member practiced sports and lower number of screen time hours, improved academic performance, and better self-perceived health. Participation in extracurricular sports activities seems to be associated with immediate environment



Sánchez-Hernández S, Martos-García D, Soler S, Flintoff A. (2018)	Spain	Challenging gender relations in PE through cooperative learning and critical reflection	Interpersonal influences	Qualitative, ethnographic study	Adolescent girls and boys (10-14 years)	Stresses the importance of working on gender roles in sports jointly with adolescent boys and girls, so that they are aware of the experiences of the other gender
Sauvage-Mar C, Naylor P-J, Higgins JW, Vonbuchholz H. (2019)	Canada	Way2Go! Social marketing for girls' active transportation to school	Situational influences	Qualitative, grounded-theory study	Adolescent girls (7-15 years)	Highlights the factors that motivate adolescent girls to engage in active transport
Shannon CS. (2016)	Canada	Exploring factors influencing girls' continued participation in competitive dance	Benefits Self-efficacy Activity-related affect Situational influences	Qualitative, phenomenological study. Semi-structured interviews, observation	Adolescent girls (12-17 years)	Points to the importance of enjoyment and affect around physical activity as keys to adolescent girls remaining active
Sindik J, Kozjak Z, Dodigovic L, Corak S (2016)	Croatia	Analysis of the relevant factors for engaging women in various sports in Croatia	Barriers	Descriptive quantitative study. Survey of 342 women	Women aged 14 to 74	Establishes perceived barriers in adolescence to engaging in physical activity that are perpetuated as women age
Standiford A. (2013)	United States	The secret struggle of the active girl: a qualitative synthesis of interpersonal factors that influence physical activity in adolescent girls	Barriers Benefits Activity-related affect Interpersonal influences Situational influences	Meta-analysis of 19 qualitative studies	Adolescent girls	Shows that the most decisive aspects for adolescent girls to be active are comparing their skills with others; the influences of parents, teachers, and friends; and the perception of their physical appearance
Van Kessel G, Kavanagh M, Maher C. (2016)	Australia	A qualitative study to examine feasibility and design of an online social networking intervention to increase physical activity in teenage girls	Barrier Benefits Activity-related affect	Qualitative, phenomenological study. Focus groups	Adolescent girls (13-18 years)	Emphasizes that online platforms for sharing exercise activities can have motivating attributes such as socializing and gamification. However, the platforms need to be updated constantly
Voskuil VR, Robbins LB. (2015)	United States	Youth physical activity self-efficacy: a concept analysis	Self-efficacy	Concept analysis literature review	Adolescent girls and boys	Describes the concept of perceived self-efficacy for adolescents in developing physical activity habits
Vu M, Murrie D, Gonzalez V, Jobe J. (2006)	United States	Listening to girls and boys talk about girls' physical activity behaviors	Barriers Benefits Interpersonal influences	Qualitative, phenomenological study. Focus groups and semi-structured interviews	Adolescent girls and boys (11-15 years)	Shows the differences between girls and teenage boys around physical activity: perceived barriers, choice of activities, priorities, and the



						perception of shared physical activity
Wieland ML, Biggs BK, Brockman TA, Johnson A, Meiers SJ, Sim LA, Tolleson E, Hanza MM, Weis JA, Rosenman JR, Novotny PJ, Patten CA, Clark MM, Millerband J, Sia IG (2020)	United States	Club Fit: development of a physical activity and healthy eating intervention at a Boys & Girls Club after school program	Self-efficacy	Qualitative study. Community-Based Participatory Research Partnership for 6 months	Adolescent girls and boys (10–11 years)	Club Fit, which promotes physical activity, is associated with improved self-efficacy and motivation for physical activity in adolescents
Yungblut H, Schinke R, Mcgannon K. (2012)	Canada	Views of adolescent female youth on physical activity during early adolescence	Barriers Benefits Self-efficacy Activity-related affect Interpersonal influences	Qualitative study, interpretive phenomenology. Focus groups, with design by the participants (12-18 years)	Adolescent girls	Describes the experiences of adolescent girls around physical activity, including the influence of the sociocultural surroundings, stereotypes, physical education, and physical appearance



DISCUSSION

Perceived barriers become mental blocks to physical activity or reasons to stop doing it. In almost a third of the studies reviewed, this aspect is key. The girls indicate as main barriers: dissatisfaction with their bodies, having their period, lack of time to combine physical activity with school, part-time-work and other obligations, fear of getting hurt, bad weather, lack of transportation, and lack of economic resources. Therefore, it is necessary to implement health policies to improve physical activity at schools and in communities and eliminate perceived barriers (Padehna et al., 2018).

The perception of benefits consists of positive mental representations that reinforce physical activity, such as motivation and the expectation of positive results. Among the studies reviewed, the attractive, fit, physically performing body and being made to feel good enough, as well as opportunities for socialising, are the main benefits that adolescents perceive with the practice of physical activity. The data suggest that the nature of the experience that young people have could be an important factor for future participation in physical activity. Therefore, understanding how and why positive psychological experiences occur for young people when they engage in physical activity is crucial for developing interventions that promote such experiences and their associated benefits (Jackman et al., 2021).

The person's judgment that he or she can undertake physical activity, using his or her own resources and skills is an important factor for physical activity. The perception of self-efficacy is key for encouraging adolescent girls to begin and maintain physical activity, and it interacts with other beliefs and other experiences, such as enjoyment and the perception of barriers. These factors affect girls' motivation to participate in physical activity. Empowering messages that stress the talent of each adolescent girl encourage girls to perceive themselves as self-efficacious (Dishman et al., 2019).

The feelings or sensations that a person experiences before, while or after carrying out a physical activity is an important motivational factor to ensure its continuity. Activity-related affect, such as enjoyment, pleasure, and the ability to compete, regardless of the result, become an intrinsic motivation that helps maintain physical activity. Moreover, experiencing

physical activity with friends and family is another motivation that increases enjoyment. Uncovering these relationships between environmental factors and the enjoyment of physical activity provides insight into the strategies that families, schools, and communities can use to promote the enjoyment of physical activity (Owne et al., 2014).

In half of the studies reviewed, interpersonal factors are linked to physical activity, both alone and in association with other factors. The main factors are family, friends, socio-cultural patterns, and the community. In this sense, beliefs, attitudes, and behaviours of others are linked to how and whether adolescent girls participate in physical activity. Parental support in its different forms—instrumental, modelling, restriction of sedentary behaviour, encouragement, and sharing—are related to the initiation and maintenance of physical activity (Yao & Rhodes, 2015). Some studies show the relationship between family support and self-efficacy, and enjoyment of physical activity, so that parents seem to have an important role in promoting or impeding youth self-efficacy beliefs and enjoyment (Wing et al., 2016). In addition, experiences in primary and secondary education are key elements in the development of increased physical activity behaviour (Woods et al., 2021).

In terms of situational factors, the context or surroundings can facilitate or hinder physical activity. Adolescent girls' behaviour can be modified, although this is a difficult task, and even more so in a physical and social environment that discourages physical activity (Pearson et al, 2015). Having or not having enough sport infrastructure nearby, as well as unfavourable socioeconomic situations can generate health inequality. This is particularly evident for organised sports and leisure activities in which financial support is needed. Intervention strategies that help family members overcome financial barriers, such as providing free or low-cost and locally available sports or leisure activities, can enable girls to participate in physical activities (Laird et al., 2016).

Using Pender's health promotion model has enabled us to understand the relationship between adolescent girls' experiences around physical activity and identify the factors linked to it. We must learn about the meaning of physical activity for girls in different



geographical and cultural contexts, using empirical data. Importantly, the studies we reviewed established the correlation among factors favouring physical activity among adolescent girls but not causation among them. Future research is necessary to explore the relationships of cause and effect.

Based on the results of this scoping review, guidelines emerge for the design of future interventions with the goal of increasing physical activity among adolescent girls. In 2018, the World Health Assembly agreed on a global target to reduce physical inactivity by 15% by 2030 and align with the Sustainable Development Goals. The commitments made by world leaders to develop ambitious national responses provide an opportunity to refocus and renew efforts at promoting physical activity (World Health Organization, 2020; World Health Organization, 2021).

Limitations

The studies included in this review were carried out in different social and cultural environments, meaning that the results of each study cannot necessarily be extrapolated to other environments. The same occurs with the concept of gender roles, which differently evolve over time in each community.

Implications for practice and policy

Policy makers and stakeholders should be encouraged to act now for the health of this and future young generations, thereby supporting the achievement of the 2030 Sustainable Development Goals. Understanding the factors that encourage and hinder physical activity in adolescent girls will allow health services researchers, social scientists, health care and public health professionals, and education professionals to improve their knowledge of girls and women's health in varied fields and work together to design effective physical activity promotion interventions. This can influence policy makers and community networks and lead to changes in organisations. A set guideline has been created for professionals who wish to develop interventions and promotion programmes to increase physical activity in adolescent girls (Table 3). They can help improve the quality of health care for women and the health of

women throughout their lives, thus empowering them and reducing gender inequality.

Table 3. Guidelines for promoting physical activity in adolescent girls

1.	Represent different body types performing physical activities in the media, going beyond the traditional model of the athletic body. Physical appearance and dissatisfaction with one's own body are key issues. There should be regulation around the way that sporting marketers present bodies engaged in physical activity.
2.	Create activities to encourage physical activity in adolescent girls that are specifically for them. Many girls feel more comfortable engaging in exercise with other girls and engaging in non-competitive sport. This suggestion relates specifically to girls who haven't begun to engage in physical activity.
3.	Create campaigns that break with gender roles in physical activity that influence the adolescent population and the rest of the community. Undermine stereotypes that lead families to neglect physical activity in girls.
4.	Ensure through governance that no adolescent girl stops engaging in physical activity because of a lack of resources or economic difficulties. It is also necessary to invest in physical environments in all communities. Adolescent girls prefer closed sports complexes or gyms where they can shower after engaging in physical activity, over outdoor sites.
5.	Work on self-efficacy through school-based activities. Self-efficacy is another aspect of children's emotional education that can have a positive impact on physical activity in adolescent girls, especially the commitment to stay active.
6.	Ensure that most of the transport that adolescents use is active (when possible). At a time when micro-mobility modes of transport, such as the e-scooter, have become increasingly popular, it is necessary to create programs involving different sectors (education, health, government) that can make it attractive for adolescents to walk, bike, or use a non-motorized scooter. One possibility would be to prohibit the use of e-scooters for children and young teens. This measure would both improve safety and encourage the use of active transport.
7.	Promote physical activity in the adolescent population (especially girls) using social networking sites and engaging the help of influencers. Motivating messages are empowering to adolescent girls.
8.	Include not only friends but also family in



interventions. It is equally important for the parents to be committed to girls' physical activity and engaged in physical activity themselves, especially for mothers. Engaging in physical activity with their families encourages girls to maintain physical activity.

9. Carry out sensitization programs for physical education teachers about the problem of insufficient physical activity in adolescent girls and the factors related to it. Experiences that girls have in primary and secondary school have a strong influence on them. Having positive or negative experiences can make a big difference in their perceived barriers, their expectations, and their behaviour before initiating a physical activity.
10. Encourage community networks. In many areas, there are sports and leisure organizations that, with the support of government and other sectors engaged in the community, can participate actively in designing, funding, and carrying out health promotion programs for physical activity. When girls feel that their community offers them opportunities to be active, they are able to engage in physical activity near home and feel that the perceived barriers are lower.

CONCLUSIONS

The purpose of this study was to identify the factors linked to the initiation, maintenance, and abandonment of physical activity among adolescent girls. The review identified forty-two studies that focused on the key factors that determine physical activity in adolescent girls. Low levels of physical activity in adolescent girls are related to gender, and girls are less likely than boys to benefit from physical activity. The literature reviewed suggests that the key to starting and maintaining physical activity among girls is perceived self-efficacy, and positive affect linked to the activity. Girls' perceptions of physical activity and of their own interpersonal and physical environment are important factors in their decision to engage in physical activity or not. The socioeconomic and cultural context of each girl also plays a role. They reveal that the perception of barriers and situational influences are the main reasons for low levels of physical activity.

The sample included practically the same number of quantitative and qualitative studies, although most of the research that emerged from the databases was quantitative. Qualitative research provides information on the experiences of girls with regard to physical activity, which makes it possible to identify the relevant factors that emerge in their reports. The

application of the Pender health promotion model has allowed us to evaluate the existing research on the factors linked to physical activity in adolescents. More qualitative studies are needed on the perceived benefits of physical activity and the role of situational influences. It also needs quantitative and mixed-method studies to uncover causal relationships between factors linked to girls' decisions to start, maintain, and stop physical activity. This information would allow the design of better interventions to promote physical activity in adolescents and thus be able to enjoy its health benefits.

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