



Body image, physical activity, and sport: A scoping review

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ABSTRACT

Objectives: This scoping review explored the associations between physical activity, sport, and body image.

Design: Scoping review.

Method: The studies were identified and selected using broad search criteria using MEDLINE, EMBASE, and PsycINFO via Ovid and CINAHL, Gender Studies and Sport Discus via EBSCO, from January 1, 2008 up to May 15, 2018 for English peer-reviewed publications. A rigorous evaluation following specific exclusion criteria ensued and 210 publications (182 quantitative, 26 qualitative, and 2 mixed-methods studies) were indexed and summarized using frequency counts.

Results: The studies were focused exclusively on sport (14.8%) or physical activity (defined as structured or leisure; 85.2%). The majority of the quantitative studies (58.2%) focused on the relationship between physical activity or sport and body image whereas 41.8% explored how body image was either a protective factor or deterrent for physical activity or sport participation. Four qualitative studies specifically examined the intersection of physical activity or sport and body image experiences. Based on the frequency of reported findings in the journal articles, participation in physical activity and sport was related to less negative and more positive body image. Negative body image was linked to lower physical activity and sport participation and was discussed qualitatively as a barrier to participation. Positive body image was associated with greater participation in physical activity and sport. There was no empirical focus on the bi-directional and reciprocal associations between physical activity or sport and body image, thus precluding any causal conclusions.

Conclusions: Future research is needed using integrative conceptual frameworks and research designs that emphasize and delineate the causal, bi-directional, and reciprocal associations between body image and physical activity and sport behaviors.

1. Introduction

In sport and exercise psychology research, body image has received considerable attention and has been touted as an important factor related to physical activity and sport behavior. Specifically, the most commonly adopted definition of body image is a multidimensional construct focused on both the body's appearance and function. The perceptual dimension constitutes how one sees and describes their body appearance and function, whereas the cognitive dimension assesses thoughts about one's body appearance and function. The affective dimension is focused on the individual's feelings and emotions about their body appearance and function, and the behavioral dimension assesses behaviors resulting from perceptions, thoughts, and/or feeling about body appearance and function (Cash & Smolak, 2011). Specific to sport

and exercise psychology, body image is relevant as a correlate, antecedent, and consequence of physical activity (e.g., structured exercise, leisure and lifestyle physical activity) and sport (e.g., competitive and/or recreational activity involving skill and physical exertion) behavior, whereby multiple dimensions of one's body image may be implicated in the engagement of physical activity and sport behavior. Examining the complex and nuanced impact of body image in physical activity and sport behavior is important, given that levels of physical inactivity are high (e.g., estimates of less than 15% of youth and adults are active enough to gain health benefits) and inactivity is a leading risk factor of chronic disease and premature mortality worldwide (Lee et al., 2012). In light of the prevalence of inactivity, efforts aimed at understanding how pertinent psychological factors – such as body image – may be associated with physical activity or sport are of high importance.

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Much of the literature on body image has focused on testing how physical activity and sport are associated with more favorable body image, or how sport and physical activity interventions may be used to improve body image. For example, one sport-based meta-analysis (Hausenblas & Downs, 2001) of 78 studies found that athletes reported less negative body image scores compared to non-athletes [overall effect size (ES) of 0.27]. Results from another four meta-analyses revealed small to moderate effects (ES = 0.24 to 0.66) of structured aerobic and/or resistance exercise improving body image (Bassett-Gunter, McEwan, & Kamarhie, 2017; Campbell & Hausenblas, 2009; Hausenblas & Fallon, 2006; Reel et al., 2007). It is proposed that physical activity and sport impose actual changes to the physical self (e.g., weight, body shape, and appearance), perceived changes to the physical self, and build self-efficacy and confidence that all lead to improvements in body image (Martin Ginis & Bassett, 2012; Martin Ginis, Bassett-Gunter, & Conlin, 2012). However, it is also possible that body image deters or motivates physical activity and sport participation. With the existing syntheses of literature focusing exclusively on the unidirectional association of physical activity or sport on body image, there is an important knowledge gap of the reverse association (i.e., body image related to physical activity or sport) or bi-directional nature of these associations.

A scoping review may facilitate a more comprehensive understanding of the association between physical activity and sport and body image, because it allows for a broader conceptual scope of the literature (Arksey & O'Malley, 2005) and can stimulate new research questions that can further advance research in this area (Peterson, Pearce, Ferguson, & Langford, 2017). Specifically, the narrow and defined focus of currently available meta-analyses and systematic reviews has limited a comprehensive understanding of research in this area (Arksey, Hilary, & O'Malley, 2005). In addition to the predominant focus of reviews using a unidirectional framework whereby physical activity or sport improves body image, several main limitations exist. For example, qualitative studies are not included in the aforementioned reviews, and cross-sectional and prospective cohort studies are also often excluded from many reviews that favor intervention designs. A scoping review framework would enable a more comprehensive summary of the type of studies being conducted in this area of research (Arksey and O'Malley., 2005). Most of the intervention studies included in the existing systematic reviews, with the exception of Bassett-Gunter et al. (2017), focus on females and less is known about the prevalence and range of studies focused on men. A scoping review framework may guide a summary of the work being done to focus on males and females in this area of research. Additionally, there is little understanding of the positive and negatively valenced constructs of body image. Researchers have historically focused on negative or pathological aspects of body image (e.g., body dissatisfaction) at the expense of understanding positive body image constructs such as body appreciation, body pride, and body acceptance (Cash & Smolak, 2011; Tylka & Wood-Barcalow, 2015; Wood-Barcalow, Tylka, & Augustus-Horvath, 2010). Given the relatively recent discussions about positive body image, little is known about the association with physical activity or sport behavior. A scoping review would enable a complete assessment of the type and intent of body image measures being used in studies linking body image and physical activity and sport. Furthermore, the existing syntheses have focused on structured exercise to the relative exclusion of other physical activity contexts such as leisure or lifestyle activity or sport. These other physical activity contexts can also be highly evaluative and important to understand relative to body image (Sabiston, Pila, Pinsonnault-Bilodeau, & Cox, 2014). A scoping review provides for an appropriate and timely form of knowledge synthesis that helps to map key concepts specific to physical activity and sport to body image, identify the types and sources of evidence, and define gaps in research (Arksey and O'Malley., 2005; Colquhoun et al., 2014; Mays, Roberts, & Popay, 2001).

Given the limitations of the existing syntheses and meta-analyses, and the need to advance understanding of the association between

physical activity and/or sport and negative and positive body image, a scoping review is a timely directive. The research question that framed this scoping review was to explore the association between physical activity, sport and body image in males and females.

2. Methods

Established criteria and guidelines for scoping reviews were followed (Arksey et al., 2005; Colquhoun et al., 2014) with six specific steps, including: (i) identifying the research question, (ii) identifying relevant studies, (iii) study selection, (iv) charting the data, (v) summarizing and collating the data and reporting the results, and (vi) consultation.

2.1. Identifying the research question

The main research question was to explore the association between physical activity, sport and body image. For the purpose of this review, physical activity was defined broadly to include leisure and lifestyle activity (any movement produced by skeletal muscles that results in energy expenditure) and structured exercise (planned and repetitive activity with the purpose of improving the body's form or function). Sport was explored as competitive and/or recreational activity involving skill and physical exertion. While Caspersen, Powell, and Christenson (1985) suggest sport is a type of physical activity and exercise is a subset of physical activity, these terms were purposefully separated for the purpose of the scoping review because all of these contexts are uniquely relevant to body image (Sabiston et al., 2014). Body image was defined as a multidimensional positive or negative construct with perceptual, cognitive, affective, and behavioral facets (Cash & Smolak, 2011) focused on the body's appearance and function.

2.2. Identifying relevant studies

The following databases were searched from January 1, 2008 to May 15, 2018: MEDLINE, EMBASE, PsycINFO (accessed via Ovid) and CINAHL, Gender Studies, and Sport Discus (accessed via EBSCO). The search terms used for each database are presented in Appendix 1. The databases were searched using both controlled vocabulary (namely, MeSH in MEDLINE and PsycINFO, Emtree in EMBASE, CINAHL Headings in CINAHL, Gender Studies Headings in Gender Studies, and Sport Discus Headings in Sport Discus) and a wide range of free-text terms. Relevant keywords included terms related to physical activity (e.g., physical activity, sport, exercise) AND body image (e.g., body image, appearance). Journals, reference lists of included studies, and previous reviews were also manually searched. The search was executed by one author (MV) with guidance by a university librarian. Screening of the six databases was performed in two phases. First, titles and abstracts of identified articles were initially screened by one reviewer (MV) to exclude articles out of scope using predefined eligibility criteria. A nother review of the titles and abstracts was then completed by a second reviewer (CS). Second, full-texts of the potential studies for inclusion in the review were screened for eligibility by two reviewers (CS and EP). Disagreement between the two reviewers was resolved by discussion and iterative discussions among the first three authors. It should be noted that each of the current authors has studied body image and physical activity and/or sport throughout their research careers spanning 3–20 years.

2.3. Study selection

Peer-reviewed articles describing research with human participants were sought. Quantitative and qualitative studies were excluded if they (a) were not written in English, or full texts were not available; (b) were published before January 1, 2008 or after May 15, 2018; (c) were not empirical (e.g., conceptual, review, or philosophical only); (d) were

dissertations or theses.

In addition to these detailed exclusions, a number of additional criteria were followed for this scoping review. First, we limited the review to children, adolescents, and emerging to middle-aged adults due to the unique appearance, functional, and health-related changes that occur with older age, and the well-documented shifts in body image in this period of the lifespan (Tiggemann, 2004). As such, studies targeting participants over the age of 65 years (i.e., sample exclusively over 65 or mean age of sample over 65 years) were excluded. Second, we excluded clinical or treatment-seeking populations (e.g., cancer, pregnancy, clinical diagnosis of mental illness). Overweight and obesity was also considered clinical if the sample was in a medical weight management program. The decision to omit these populations was due to the direct and indirect effects these health conditions have on actual and perceived body-related indices, and the active pursuit of body weight, shape, and appearance changes.

Third, if the authors of the studies focused on objective or self-reported weight only, rather than perceptual weight status, there was no explicit body image measure and the study was excluded. Also, if constructs similar to body image were exclusively studied as the main determinant or outcome and body image was not assessed then the study was excluded. Constructs such as self-esteem, physical self-concept, weight stigma, and thin-ideal internalization are distinct from body image (Thompson, 2004). Furthermore, we excluded studies with a sole focus on social physique anxiety (SPA). While we acknowledge that SPA is sometimes conceptualized as an affective measure of body image, there is a comprehensive review of the association between SPA and physical activity among 126 studies spanning the years 1989–2013 (Sabiston et al., 2014). We did not want to bias the current review with a preponderance of SPA-related studies given the underlying roots in social anxiety and not in body image (see Hart, Leary, & Rejeski, 1989). Nonetheless, if SPA was one of several body image measures, which is often the case, the study was included in the current review. As such, only studies exclusively focused on SPA were excluded.

Fourth, if the studies were not explicitly focused on physical activity or sport behaviors they were excluded. Studies were specifically excluded if there was a focus on motor behavior or fitness outcomes, as were studies focused on physical activity or sport motivation, goals, addiction, dependence, compulsions, and intentions with an absence of actual behavior. If the studies also included behavior they remained in the analysis. Furthermore, studies focused exclusively on physical education experiences as the behavioral indicator of physical activity were excluded. This decision was based on the uniqueness and differences of every physical education class, course, instructor, and school and it becomes challenging to identify what type of behavior is actually being measured. Time spent in physical education is also complex given the focus on skill acquisition and pedagogical units in addition to movement. Also, oftentimes there is no behavioral measure within physical education studies.

Fifth, studies that did not report on the relationship between body image and behaviors of physical activity or sport in a numerical or textual way were excluded. For example, studies that focused on comparing body image among athlete or exercise groups or focused exclusively on athletes/exercisers were excluded if there was no non-athlete/exerciser comparison group or no measure of physical activity or sport behavior.

2.4. Charting of the data

The abstracted data for quantitative studies included authors and date, main study purpose, study design, population and sample size, theoretical framework, body image measure, physical activity measure, and a summary or brief overview of the main findings. These characteristics were presented in table format. The abstracted data for qualitative studies included similar information on the purpose, methodology, sample characteristics, and main findings. These

characteristics were also presented in table format. Summary statistics were computed as frequencies for descriptive purposes. Of importance, the target sample was coded as children if the mean of sample was ≤ 12 years, adolescents were 13–18 years, emerging adults (which was primarily college or university students) was 19–30 years, and adults were coded as 31 years and above. Furthermore, the research design was coded as cross-sectional if data were collected at one time point, longitudinal if the data were collected as part of a cohort, quasi-experimental if there was a control group but not randomized or a single-group intervention, and randomized controlled trial (RCT) if a control group was included and participants were randomly assigned to a condition. Daily diary, ecological momentary assessments, and experience sampling methods were grouped together for descriptive purposes but labelled as they were described in the original research.

The body image measures were coded based on positive or negative valence depending on how the authors conceptualized the measures, and not necessarily the way the measures were intended to be used. For example, the Body Shape Questionnaire (Cooper, Taylor, Cooper, & Fairbum, 1987) was intended as a measure of body satisfaction, with higher scores indicating higher levels of satisfaction. However, it was used inconsistently as either a measure of satisfaction or dissatisfaction and was therefore coded as either positively or negatively valenced depending on the author's intention. One exception to this coding structure was with all silhouette or figure rating measures, which were coded as *perceptual* measures, rather than valenced positive or negative, even if the authors classified them as dissatisfaction. Aside from perceptual measures which were coded as such due to ambiguity in valence (e.g., reporting a certain body shape or weight status does not infer positive or negative descriptions), all other body image measures were not coded by dimension (e.g., cognitive, affective, behavioral) because there is considerable inconsistency in the labeling and definitions, thus rendering any match between construct and indicator challenging. For example, early conceptualizations of the multidimensionality of body image identified four dimensions (e.g., perceptual, cognitive, affective, and behavioral) and unique *evaluative* and *investment* components – whereas other dimensions such as subjective evaluation have also been used as classification in other reviews (Bassett-Gunter et al., 2017; Cash & Pruzinsky, 2002; Cash & Smolak, 2011; Hausenblas & Downs, 2001; Thompson, Heinberg, Altabe, & Tantleff-Dunn, 1999).

Physical activity measures were coded as self-report, device-based measures (e.g., accelerometers or pedometers), or participation (e.g., intervention involvement, sport, or athlete status). The measures were also coded if they were validated and psychometrically tested tools or developed by the authors to be study-specific.

2.5. Collating, summarizing, and reporting results

The data collected from the identified studies were inputted into a table and were analyzed descriptively and reported as frequency counts. Aligned with scoping review guidelines (Arksey et al., 2005; Colquhoun et al., 2014), the findings were discussed with respect to the review purpose, along with consideration of implications for research, policy, and practice. It is important to note that, aligned with the guidelines of a scoping review, none of the studies were evaluated for quality and all reporting in this review is based on direct presentation of results from the authors of the included studies.

2.6. Consultation

While consultation with key stakeholders is optional in a scoping review, eight local stakeholders were involved throughout this review process (e.g., January to August 2018). Formal discussions with expert researchers in body image, physical self-concept, and identity ($n = 2$) and exercisers and competitive athletes ($n = 3$) resulted in refining the search criteria, as did collaboration with a librarian. These individuals

were identified from the researchers' networks of collaborators, students, and former research participants and invited to participate in regular meetings. The stakeholders were asked to review the list of key terms and offer suggestions for inclusion and exclusion criteria. Following the search and summary of the material, the findings of this review were also presented to community body image stakeholders ($n = 3$; executive director of equity in sport, director of physical activity programming, research manager for a non-profit sport organization). The stakeholders were identified through a local research-to-practice day focused on women and girls in sport and were asked to become part of a working group on body image. The first two researchers and these stakeholders met regularly to discuss the implications of this review and how the findings may be used for program and policy advancements. Specifically, these individuals were asked to read the summaries and to identify which findings are helpful to their practice. They were also asked to identify language barriers in the reporting of the results and if any key endpoints or future directions were missing.

3. Results

The database search yielded a total of 28,575 records. After removing duplicates, 15,813 title and abstracts were screened for eligibility and 273 potentially relevant citations were retrieved in full-text. Following full-text review, 210 articles were included in this review (see Figure 1) as 182 quantitative, 26 qualitative, and 2 mixed-methods studies. A summary of the included studies is presented in the Supplementary Table 1 (quantitative studies) and Table 2 (qualitative and mixed-methods studies).

3.1. Overview of findings

Based on general patterns of results and the most frequent published associations, participation in physical activity and sport was related to less negative and more positive body image. Furthermore, negative body image, predominantly studied as body weight or shape dissatisfaction, was linked to lower physical activity and sport

participation and was discussed qualitatively as a barrier to participation. Alternatively, positive body image, studied most frequently as body satisfaction, tended to be associated with greater participation in physical activity and sport. This pattern of findings was consistent for men and women, and across the ages included in this scoping review. Of note, there was no empirical focus on the bi-directional and reciprocal associations between physical activity or sport and body image, thus precluding any causal conclusions. As a further distinction, 14.8% of the studies were focused on sport and the remaining 85.2% of the studies included in this scoping review were focused on physical activity (and, in particular, structured physical activity).

In spite of the general summary of significant findings, 26 of the quantitative studies (13.7%) reported 33 null effects of physical activity or sport and body image. Among these findings, 36.4% of the null effects were reported when the researchers used a perceptual measure of body image (all structured physical activity studies), 24.2% focused on positive measures of body image (two studies focused on sport and six studies focused on structured physical activity), and 39.4% of the null effects were reported between physical activity or sport and negative body image (three sport and 10 structured physical activity studies). Many of the null effects were reported when the researchers controlled for body mass index, and some emerged for one sex or the other but most often effects remained significant when sex was controlled in the analysis. In one study (Arigo, Butryn, Raggio, Stice, & Lowe, 2016), there were no between-person effects but the within-person association was significant and counterintuitive. Specifically, when body satisfaction and appearance evaluation were higher than the female's average, they engaged in less lifestyle and leisure physical activity measured as step count.

3.2. Purpose of research

The general aims of the quantitative studies included in this scoping review centered on an understanding of body image factors related to participation in physical activity or sport, or comparing body image among active and inactive samples or sub-groups. Oftentimes, body image was one of several psychosocial variables in the studies, or

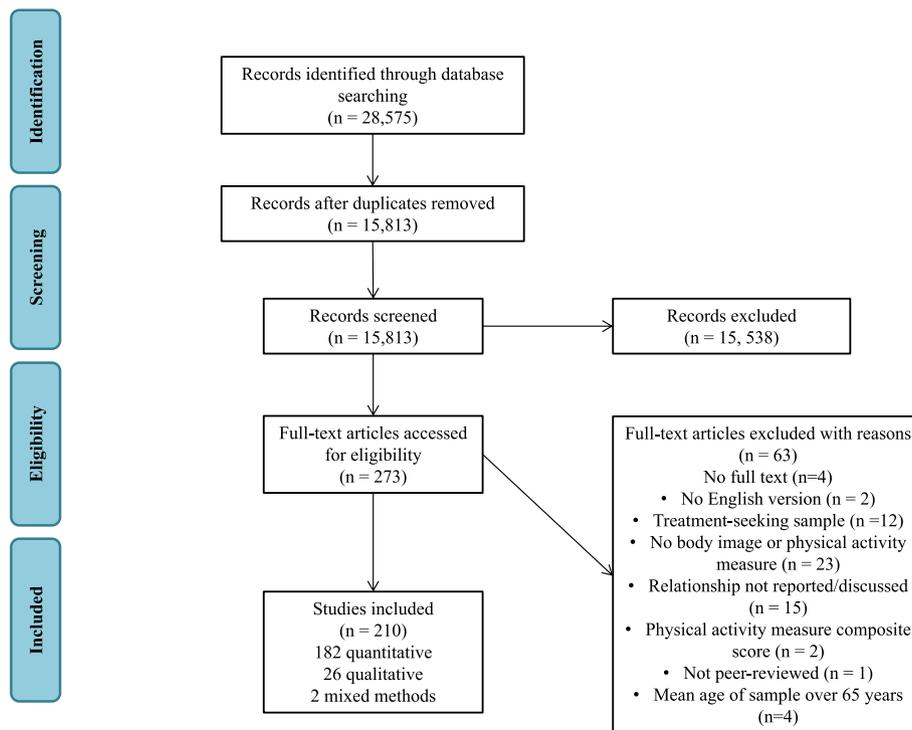


Fig. 1.

physical activity or sport was one of many behavioral correlates of body image. A number of publications with larger sample sizes were also based on secondary data or previously published studies where the physical activity or sport and body image relationship was not central to the overarching aims of the study. As a general summary, 58.2% of the quantitative studies set out to study how physical activity or sport related to body image and 41.8% of the studies justified aims exploring how body image was either a protective factor or deterrent for physical activity or sport participation. Of these latter studies, it is noteworthy that 22.4% did not exclusively focus on physical activity (e.g., physical activity was presented as one of a number of weight-control or health behaviors) and 9.2% did not exclusively focus on body image (e.g., body image was one of several psychosocial or mental health correlates of physical activity). The specific bi-directional or temporally reciprocal association needed to draw causal conclusions was not assessed.

In the qualitative studies, the main aims were either focused on understanding physical activity experiences, including barriers and motivators to participation (46.4%) or on experiences of body, identity, shape, and weight (39.2%). The majority of these studies did not explicitly seek to understand the inherent association between physical activity and body image, yet the researchers identified these factors inductively. Four additional studies (14.3%) specifically examined the interplay between physical activity and body image experiences. It was clear that the qualitative studies also purposefully targeted unique samples as a main aim, such as exploring the physical activity experiences of individuals from specific cultural/ethnic groups, sexual identity, and characteristics such as obesity, low activity, high body dissatisfaction, and larger gay men (e.g., Bears) were highlighted.

3.3. Study design

The majority of quantitative studies (64.8%) were cross-sectional using self-report surveys. A number of studies used longitudinal (9.3%) and quasi-experimental research designs (18.7%), which predominantly examined the effects of participating in sport or physical activity on body image outcomes. There were only two of these studies (1%) exploring the effects of sport interventions (implementing soccer and football programs) on body image (Rinaldo, Zaccagni, & Gualdi-Russo, 2016; Seabra et al., 2014). Three quasi-experimental studies aimed at testing acute exercise effects on body image (Niven, Rendell, & Chisholm, 2008; Vocks, Hechler, Rohrig, & Legenbauer, 2009; Waldorf, Erkens, Vocks, McCreary, & Cordes, 2017), with one of these studies specifically focused on abstinence of exercise rather than participation (Niven et al., 2008). Additionally, 4.9% of the studies were RCTs and four (2.2%) studies used momentary assessment designs employing repeated within-day sampling methods (Fardouly, Pinkus, & Vartanian, 2017; Fuller-Tyszkiewicz, Skouteris, & McCabe, 2013; LePage & Crowther, 2010; Pila, Barlow, Wrosch, & Sabiston, 2016).

The researchers of qualitative studies described using individual face-to-face interviews most frequently (61%). Focus groups were also commonly used (35%) and other qualitative methodologies included ethnography and narratives (2 studies each; 7.1%). Four studies (14.3%) used a mix of focus groups and interviews, and three studies used a mix of interviews and ethnography or narratives. Mixed-methods studies were rare with only two studies presenting integrated qualitative and quantitative findings included in the scoping review. One study focused on understanding body-related envy and relationships to physical activity (Pila, Stamiris, Castonguay, & Sabiston, 2014), and the other study aimed to understand men's healthy eating and physical activity experiences related to weight management (Walsh, White, & Greaney, 2009). One other qualitative study was part of a larger multi-method study (Beltran-Carrillo, Devis-Devis, Peiro-Velert, & Brown, 2012) but presented only the interview data.

3.4. Sample

The majority of the quantitative and qualitative studies targeting the relationship between physical activity or sport and body image in this scoping review were conducted with adolescent (31.9%) and emerging adult (39%) samples, which predominantly focused on college or undergraduate samples. Relatively few studies (8.8% quantitative and 3.6% qualitative) included children, and even less targeted only children since some studies involved both children and adolescents. Samples were predominantly from Europe, Australia, and North America and represented diverse cultural backgrounds (e.g., African American, Chinese, Costa Rican, Brazilian, Dutch, South African). The samples also tended to include both males and females (51.1% of the quantitative studies and 35.7% qualitative/mixed-methods). More studies focused exclusively on females (42.3% quantitative studies and 39.2% qualitative studies) compared to males (6.6% quantitative studies and 25% qualitative studies), and sex was described as a binary construct in the majority of studies.

3.5. Theoretical framework

Most of the quantitative studies did not identify a theoretical framework used to rationalize or inform the study objectives (66.5%). Of the studies reporting a framework, objectification (Fredrickson & Roberts, 1997) and self-determination (SDT; Deci & Ryan, 2001, 2002) theories were used most frequently (7.7% and 6.6%, respectively), followed by social cognitive theory (Bandura, 1991), the exercise and self-esteem model (EXSEM; Sonstroem, Harlow, & Josephs, 1994; Sonstroem & Morgan, 1989), and social comparison theory (Festinger, 1954) which were each used in 1.6–2.7% of the identified research. Few (4.4%) studies were also directly informed by at least two theories, with the most common combinations involving SDT, self-discrepancy (Higgins, 1987), social comparison, self-efficacy (Bandura, 1997), social cognitive, or objectification theories. There was also a diverse representation of other theories used infrequently, including theories typically used to examine physical activity or exercise and other health behaviors [e.g., transtheoretical model (Prochaska, DiClemente, & Norcross, 1992; Prochaska & Velicer, 1997), theory of planned behavior or theory of reasoned action (Ajzen, 1985; Ajzen et al., 1980), and health belief model (Janz & Becker, 1984)], and theories/models published in body image and weight management research and practice [e.g., acceptance model of intuitive eating (Augustus-Horvath & Tylka, 2011; Avalos & Tylka, 2006), tripartite influence model (Shroff & Thompson, 2006; Tylka, 2011; Van Den Berg, Thompson, Obremski-Brandon, & Coovert, 2002), embodiment model (Mahlo & Tiggemann, 2016; Menzel & Levine, 2011), and the homeostatic model of obesity (Diclemente & Delahanty, 2016; Marks, 2015)]. Overall, 24 unique models or theories were identified in the research included in this scoping review focused broadly on physical activity and sport and body image.

Almost 60% of the studies focused on the association linking body image to physical activity or sport were atheoretical compared to 75% of the studies exploring aims of physical activity or sport and the relationship to body image. The theories used to most commonly explore the former association included SDT (Deci & Ryan, 2002), self-efficacy theory (Bandura, 1997), and social cognitive theory (Bandura, 1986). Objectification theory (Fredrickson & Roberts, 1997) was used to explore the effects of physical activity on body image, and the effects of body image on physical activity almost equally. EXSEM (Sonstroem & Morgan, 1989) was the other most frequent model to explain the association between physical activity and body image. Sport-specific studies were more likely to be atheoretical compared to studies focused on physical activity.

3.6. Body image measures

The most common measures of body image included subscales from questionnaires such as the Multidimensional Body Self-Relations Questionnaire (MBSRQ; Brown, Cash, & Mikulka, 1990; Cash, 1994), The Objectified Body Consciousness Scale (McKinley & Hyde, 1996), and the Eating Attitudes Test (Garner, 2004; Garner, Olmsted, Bohr, & Garfinkel, 1982). Silhouette or figure-rating measures were frequently used (Collins, 1991; Stunkard, Sorenson, & Schulzinger, 1983) along with single items to assess perception of weight and body shape (24.3%). In a few of these studies utilizing silhouette or figure-rating measures, the researchers created a discrepancy score to identify ideal versus actual body image, however the majority of studies employed a descriptive perceptual score for weight or shape as body image (e.g., perceived the self as 'overweight'). There were a relatively similar number of studies operationalizing body image as a positive construct (30.4%) and a negative (36.5%) construct. Additionally, 8.8% of the studies measured both positive and negative body image.

3.7. Physical activity or sport measures

The majority (71.4%) of studies used a self-report measure of physical activity and the measure appeared to be dependent on the target sample. For example, most studies focused on children and adolescents used the Physical Activity Questionnaire (Crocker, Bailey, Faulkner, Kowalski, & McGrath, 1997; Kowalski, Crocker, & Donen, 2004) most often and the two-item screening measure (Prochaska, Sallis, & Long, 2001), whereas the Leisure Time Exercise Questionnaire (Godin & Shephard, 1985) or the International Physical Activity Questionnaire (Craig et al., 2003) were the most commonly used measures among emerging adults and adult samples. A number of researchers also developed measures for the purpose of the study (40% of all self-report studies used a non-validated measure), and these measures tended to assess frequency and/or duration of physical activity or sports. Studies integrating a device measure of physical activity were rare (6%) and used either a pedometer assessment of step counts or an accelerometer. Nearly 27% of the studies in the review used *participation* as a measure of physical activity or sport. Among these studies, 30.6% compared athletes to non-athletes, and the remaining explored participation in an intervention or exercise program.

4. Discussion

This scoping review provided an overview of the association between physical activity and sport and body image. Commensurate with the findings of existing systematic reviews related to this topic (e.g., Campbell & Hausenblas, 2009; Hausenblas & Fallon, 2006; Reel et al., 2007), individuals who participate in sport or physical activity report lower scores on a range of measures capturing negative body image constructs. Nonetheless, this scoping review provided an opportunity to also explore the plausible and theorized direction of relationship between physical activity and sport and body image, to consider positively and negatively valenced assessments of body image, to identify the samples often targeted in this area of research, and to summarise the breadth and scope of measures used to assess both body image and physical activity and sport. Indeed, consultation with key stakeholders suggested that further consideration of the body image and physical activity and sport relationship was a priority since the existing meta-analyses present a narrow focus (e.g., primarily body dissatisfaction measures and structured exercise) that hinders the ability to translate research findings into practice. Overall, it is clear that the associations between body image, physical activity, and sport are complex – they are dynamic, bi-directional, acute, and chronic, and the scoping review findings inform new research questions and areas of focus for future work.

4.1. Direction of effects

One of the unique contributions of this scoping review was to consider the diverse representations of the association between physical activity and sport and body image. Overall, the findings from this scoping review are consistent with, yet advance, previously published evidence. All past reviews and meta-analyses on this topic have tested the hypothesis that physical activity or sport improves body image (Alleva, Sheeran, Webb, Martijn, & Miles, 2015; Bassett-Gunter et al., 2017; Campbell & Hausenblas, 2009; Hausenblas & Downs, 2001; Hausenblas & Fallon, 2006; Reel et al., 2007), and it was clear from the current review that many researchers continue to focus on this directional relationship. Yet, the present review also found that 42% of independent studies were focused on understanding the link between body image and both the promotion or discouragement of physical activity and/or sport behavior. This set of findings is an important and overlooked area of focus in sport and exercise psychology because they highlight a possible intervention target for exercisers and athletes. However, it is noteworthy that for one-fifth of these studies, physical activity was one of several primary outcomes, and often emerged as an appearance-management method to alter or modify one's weight or body shape and size. This focus precludes an understanding of body image as a predictor of physical activity and/or sport participation, which the stakeholders referenced as a common question in the media in particular for female sport and physical activity participation (e.g., is body image a reason why girls drop out of sport?). It is possible that the lack of research on this direction of effects, and in particular in sport, may reflect a lack of theory on this specific association.

4.2. Theoretical implications

Notably, many of the studies were atheoretical. With the lack of theories used in this area of research, the mechanisms that purportedly underlie the relationship between physical activity or sport and changes in body image were rarely tested (e.g., actual changes in one's body shape and/or weight, perceived changes in one's shape and/or weight, and improved perceptions of self-efficacy; Martin Ginis & Bassett, 2012; Martin Ginis et al., 2012). However, there is also some contestation for the mechanisms focused on *appearance* motives given the more recent advocacy for *functional* motives to promote self-care behaviors such as physical activity (Tylka & Homan, 2015). Functional motives include a focus on fitness, ability, and perceptions of physical competence and the key stakeholders identified competence and ability as integral targets for intervention based on their organizational priorities, in particular for youth. Researchers are urged to consider a more diverse perspective on the value of physical activity that extends beyond using this behavior to improve one's appearance and weight and to begin to test proposed empirically-derived mechanisms.

Similarly, the lack of theory used to test the association between body image and physical activity or sport also limited any understanding of mechanisms that could be targeted in interventions to improve behavior. Of most importance may be the identification of factors that could explain why both positive and negative body image almost equally foster or limit participation in physical activity and sport. The stakeholders that were consulted also wanted to understand the ambiguous findings on whether it was positive or negative body image that perpetuated sport drop out or low levels of physical activity and whether it was different for males and females. Theoretical frameworks might help provide blueprints to test various factors to answer this important lingering question.

4.3. Study design

The majority of studies included in this review were cross-sectional used self-report measures of physical activity. Nonetheless, four studies included in this review used multiple daily assessments that enabled a

timely assessment of fluctuations in both focal constructs. These studies also help to highlight the importance of teasing out between-person and within-person effects. These types of study designs can be used to start to understand the bi-directional and potentially causal acute or state-like associations between physical activity, sport, and body image as well as the dynamic associations. Furthermore, longitudinal cohort studies are important for predictive associations, and a direct focus on studying the longitudinal associations between physical activity, sport, and body image (and/or vice versa) continues to be needed. It was also discouraging to find limited intervention research on body image factors that could improve physical activity since the interventions were primarily physical activity programs exploring body image outcomes. Efforts are needed to identify efficacious body image strategies that may improve physical activity and sport outcomes and which interventions may be most useful for different target populations (e.g., sex/gender, age, culture). Finally, only two mixed methods studies were identified in this scoping review. Mixed-methods may also be beneficial when developing measures to advance the study of the multi-dimensional nature of body image. Also, given that qualitative findings generally describe why there may be some diversity in the strength and direction of the association between physical activity and body image in different samples, more mixed-methods studies in this area of research are needed.

4.4. Measurement considerations

From a body image measurement perspective, the majority of studies used subscales of larger scales (e.g., body surveillance and body shame subscales of Objectified Body Consciousness Scale), unvalidated items assessing weight or body shape perception (e.g., 1-item measures assessing perceptions of weight status), or figure-rating and silhouette scales (e.g., to identify body size and shape perception or to calculate a crude difference score between actual and ideal body). The focus on these weight and body size perception scales is noteworthy, especially given the critiques that have emanated from the statistical issues of calculating crude difference scores (Brunet, Sabiston, Castonguay, Ferguson, & Bessette, 2012; Cafri, van den Berg, & Brannick, 2009; Castonguay, Brunet, Ferguson, & Sabiston, 2012). Also, it is important to note that figure rating scales used as the only body image measure do not assess the level of distress or investment in the discrepancy and thus miss the essential features of body image. Correspondence with the editor of a prominent body image journal (*Body Image: An International Journal*) highlights the limitation of these measures: “In particular, we have decided against publishing articles in which the only “body image”-related measure is a figure rating scale.” (Tylka, 2018). Researchers are encouraged to move away from discrepancy scores if there is no assessment of investment and importance.

Indeed, measurement issues have been a common concern in the advancement of body image literature. Thompson (2004) has outlined common assessment errors in the measurement of body image, which were unfortunately exemplified in the studies selected in this scoping review. For example, mislabelling or misconstruing assessment tools was commonly observed – with tools often intended to measure a specific construct (e.g., body area specific satisfaction) recoded to represent another (e.g., global body dissatisfaction) or measures intended to capture body image investment (e.g., MBRSQ Appearance Evaluation subscale) as measures of body image concern or evaluation. Specifically, there is a proposed orthogonal relationship between body image *evaluation* and *investment* (Thompson, 2004), thus underscoring the importance of using measures for their intended purposes.

Further, the present scoping review aimed to identify positively versus negatively valenced assessments of body image in order to account for the broadening conceptualization of positive body image constructs. Notably, the clear majority of ‘positively valenced’ body image measures were versions of ‘body satisfaction’, which sometimes included reverse scored body dissatisfaction assessments. This is

problematic given the well-documented challenges of reverse-coded items (e.g., Weijters, Baungartner, & Schilwaet, 2013). The few studies that focused on unique components of positive body image (e.g., body pride and body appreciation) showed promise in expanding an understanding of how affective and cognitive dimensions of positive body image are linked to physical activity. Overall, the patterns of measurement issues presented methodological challenges in the selection, coding, and summary of the findings from this scoping review and consequently limited the ability to draw conclusions from heterogeneous sets of studies. It is likely that some of this confusion may reflect the diverse dimensions, domains, and facets of body image as a unitary construct, and underscores the need to more rigorously consider consistent conceptualizations and measurements of both positive and negative body image in understanding the relationship with physical activity and sport behavior.

Finally, the use of physical activity and sport behavior measures that were either developed for the study or lacked psychometric testing was high. This heterogeneity in measures of behaviors poses challenges for comparisons across studies and also precludes an understanding of what it is about the behavior that is related to body image; or how body image differentially relates to different types or doses of physical activity or sport. The use of objective or device-assisted measures is also lacking in this area of research, yet researchers are cautioned to use these devices appropriately and aligned with research questions. If there is an interest in purposeful and intentional physical activity or sport participation, self-report may continue to be the most appropriate way of measuring behavior.

4.5. Sex and gender considerations

The number of mixed-sex samples and specific samples of males demonstrates a shift in the focus of body image from a uniquely female issue. However, studies targeting specific groups were more often female-only and efforts exploring positive body image and appreciation were more likely to be in female samples. Generally, the findings from the studies included in this scoping review can be summarized that there was no consistent and specific difference in body image and physical activity experiences for males and females, and this is commensurate with reports from meta-analytic reviews (Campbell & Hausenblas, 2009; Hausenblas & Fallon, 2006; Reel et al., 2007). However, when examined, there was a propensity to discuss sex as a binary construct and it was rare to find discussions on gender. Suggestions from stakeholders involved in this review process include further research on males with a focus on positive body image, and more discussions of sex and gender with a greater emphasis on non-binary descriptions and inclusion of samples that represent Lesbian, Gay, Bi-Sexual, Transgender, Queer, and Intersex minorities.

4.6. Limitations & future considerations

Scoping reviews are aimed at broad summaries of an area of research and do not impose guidelines for assessing bias or the quality of the studies. This may be a perceived limitation of scoping review frameworks. Furthermore, while this was a scoping review, it was necessary to apply search criteria to hone in on the specific research question. As such, the conditions under which the review was conducted and the findings interpreted need to be presented. First, some constructs that are often operationalized as body image were excluded. The exclusion of studies focused solely on physical self-concept and self-perceptions and self-esteem enabled a more specific focus on body image and reviews of these constructs are available elsewhere (Babic et al., 2014; Liu, Wu, & Ming, 2015; Spence, McGannon, & Poon, 2005). The exclusion of SPA may have limited the research on negative body image. However, it was also noted that a number of studies in the review included assessments of SPA as well as body image. In fact, we conducted a separate review of SPA and physical activity/sport papers published

since the Sabiston et al. (2014) publication and only one study was excluded from this current scoping review because it focused exclusively on SPA and leisure physical activity (Gammage, Lamarche, & Drouin, 2014). Also, the general summary of findings in this review is consistent with the targeted review on SPA (Sabiston et al., 2014) and physical self-concept (Babic et al., 2014). Nonetheless, a future research direction may be to merge the findings from all studies with a perceptual or affective body size, shape, appearance, and/or function assessment related to physical activity or sport. Conceptual and measurement clarity on the operationalization of body image and physical self is certainly needed.

Second, this review excluded studies that were restricted to athlete or exercise samples. As such, the findings cannot be used to discuss differences in body image among different sports or exercise groups. There has only been one review of athletes and body image almost 20 years ago (Hausenblas & Downs, 2001), and this would be a logical area for future research. The consultation with stakeholders for this review also identified a need for understanding the specific sport and physical activity contexts that perpetuate body image concerns (e.g., what sports, why, and for whom). Nonetheless, the included research provides a comparison between these groups and non-athletic or exercise groups and the evidence generally demonstrates that sport and exercise participation supports positive body image and reduces negative body image.

It is also important to point out that this review focused strictly on physical activity or sport behavior. As such, studies linking physical activity or sport intentions, goals, motivation, and addictions (for example) were excluded yet may be valuable in advancing theory and practice in this area of research. The key stakeholders also identified a lingering interest in understanding how physical activity or sport can be used to improve body image, and why body image may lead to physical activity and sport drop-out. Both of these questions may be answered with a more detailed exploration of some of the studies focused on the achievement, goal, and motivation factors that were excluded in this review. To this point, a review of interventions that were solely focused on improving body image reported that providing physical activity opportunities was not related to body image, yet informative interventions that discussed physical activity and fitness resulted in worse body image (Alleva et al., 2015). The authors suggested that this negative effect may be explained because discussions about physical activity may highlight societal standards for weight, fitness, and appearance. As such, providing information on physical activity could instill negative emotions like guilt and shame. Researchers have confirmed this proposition indirectly with evidence that introjected motives for physical activity, which include but are not limited to exercising to avoid guilt and shame or for ego enhancement, are not effective for physical activity behaviors (Assor, Vansteenkiste, & Kaplan, 2009; Gillison, Osborn, Standage, & Skevington, 2009; Gillison, Standage, & Skevington, 2006; Ingledew & Markland, 2008). These findings demonstrate the complexity of the association between physical activity or sport and body image and the need to understand other factors associated with behavior.

Finally, this scoping review excluded studies of older adults and studies with mixed-aged and lifespan samples with mean ages over 65 years. As such, the current review likely underreports on the functional focus of body image. It may also underreport on positive body image since older adults tend to report less interest and investment in appearance (Bennett, Hurd Clarke, Kowalski, & Crocker, 2017b, 2017a; Ferraro et al., 2008; Tiggemann, 2004). It should also be noted that the key stakeholders consulted for this scoping review were primarily focused on youth and adult physical activity programming, and equity and diversity for female sport experiences. As such, more consultation is recommended for the focus on physical activity and sport and body image in older adults.

While this scoping review was conducted within certain boundaries, it has highlighted a number of areas for further research and

consideration for practice. There is an immediate need to explore the bi-directional, reciprocal, and causal relationships between physical activity and body image. Integrative frameworks of physical activity and body image are also key to advancing this area of research and practice. Furthermore, evolving theories to include positive and negative body image, as well as appearance and functional facets, is necessary. On this latter point, it is important to move away from using physical activity as a weight loss/maintenance or body shape change tool. Physical activity behavior is not restricted to an appearance-management strategy and it is necessary to consider the paradigm shift that physical activity is more important than the observable, measurable, and perceived changes that result from the behavior (Homan & Tylka, 2014; Tylka & Homan, 2015). Another area of future research is on a synthesis of qualitative papers focused on this topic. A meta-synthesis or narrative review is an obvious gap given that there were 26 qualitative studies with an inherent discussion of physical activity and body image. Finally, in all emerging studies there is an overarching need to use rigorous measures that are properly validated for the target sample and used as intended.

5. Conclusion

Given the main findings from this scoping review, there is a need for more research to advance conceptual and theoretical understanding of the potential bi-directional associations between physical activity and sport and body image. Specifically, the heterogeneity in aims and scope, samples, measures, methodologies, and findings among the studies included in this scoping review demonstrate an on-going need for query rather than complacency in understanding the physical activity and sport and body image associations.

Conflicts of interest

The authors of this manuscript, entitled “Body image, physical activity and sport: a scoping review” declare no conflicts of interest.

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Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.psychsport.2018.12.010>.

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