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Review

Body image and disordered eating prevention in girls' sport: A partner-driven and stakeholder-informed scoping review of interventions

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ABSTRACT

Despite the evidenced benefits of participating in organized sport, adolescent girls consistently report lower rates of sport participation, worse sport experiences, and higher dropout rates, compared to boys. Body image concerns have been linked to this gender disparity and established as a critical predictor of disordered eating, thus necessitating effective prevention efforts to mitigate the negative impacts of body image concerns and disordered eating for adolescent girls. In partnership with the National Eating Disorder Information Centre (NEDIC; Canada), the present scoping review was conducted to examine the nature and characteristics of sport-specific body image and disordered eating interventions for adolescent girls. Fourteen studies were identified through various search strategies. Over half of the studies demonstrated modest yet worthwhile effects on various body image and disordered eating outcomes. Intervention characteristics (i.e., frequency, modes of delivery, topics, material, outcomes measured) varied across initiatives. Fifty-nine national, provincial, and local sport system representatives were consulted as stakeholders and provided practical input to the results of the scoping review. Sport stakeholders favoured the delivery of a multidimensional, multicomponent program, with a combination of evidence-based techniques. This synthesis of knowledge will shape the development and dissemination of future programs, and contribute to the development of equitable sport participation opportunities for Canadian girls.

1. Introduction

Participation in organized sport has been associated with favourable physical, psychological, and social health outcomes (Doré et al., 2019; Eime et al., 2013; Turnnidge et al., 2014). Yet, Canadian adolescent girls report significantly less sport participation rates and worse sport experiences compared to boys (Canadian Women & Sport, 2020). These gendered participation trends are observed in other Western countries (Howie et al., 2016; Sabo & Veliz, 2008; Slater & Tiggemann, 2011), and parallel global physical activity participation rates (Guthold, Stevens, Riley, & Bull, 2020). Furthermore, girls are most likely to drop out of sport during adolescence (Canadian Women & Sport, 2020), with higher attrition compared to adolescent boys (Eime et al., 2020). These declining participation rates appear early in adolescence and are reflected in lower sport and physical activity participation in adulthood (Bélanger et al., 2015).

1.1. Body image in adolescent girls' sport participation

Researchers have proposed several intersecting factors that may be contributing to the observed gender differences in adolescent sport participation. These factors include inequities in sport access and participation opportunities, gender stereotypes that impact participation experiences, and gendered distinctions in the socialization of youth athletes (Sabiston & Crocker, 2008). For example, adolescent girls are socialized to place importance and self-worth on their appearance and body shape, whereas boys are socialized to build competence in achievement-oriented domains (Harter, 2012). Exposure to sociocultural influences, that are upheld by coaches, peers, and family, have been implicated in the disproportionate trends in negative body image concerns and body dissatisfaction facing girls in sport (Coppola et al., 2014; Fredricks & Eccles, 2005; Horn & Horn, 2007; Sabiston et al., 2020). As such, body image has been identified as a critical factor linked to girls' sport participation (Sabiston et al., 2019; Slater & Tiggemann, 2010).

Body image is a multidimensional construct that can comprise of both negative and positive facets, and includes perceptions, attitudes, emotions, and behaviours related to the body's appearance and function (Cash & Smolak, 2011). Indicators of negative body image, such as dissatisfaction with one's body weight or shape, has been linked to lower sport participation and has been discussed as a barrier to participation by girls (Sabiston et al., 2019; Slater & Tiggemann, 2010). Distinct from conceptualizations of negative body image, positive body image reflects an overarching appreciation and respect for the body (Tylka & Wood-Barcalow, 2015), and is proposed to be associated with greater sport participation (Sabiston et al., 2019). Compared to boys, girls report experiencing higher levels of body image dissatisfaction (Fischetti et al., 2019), higher levels of appearance-based teasing (Slater & Tiggemann, 2011), and higher negative body-related self-conscious emotional experiences while engaged in sport (Pila et al., 2016; Vani et al., 2020). Considering positive body image aspects and experiences within sport, gender differences exist where women in sport report lower levels of body appreciation and functionality appreciation, compared to men. However, these trends are limited to adult populations (Soulliard et al., 2019).

Researchers have suggested that the physique-salient nature of sport may encourage a dysfunctional preoccupation with body shape and weight, distort body shape perceptions, heighten body image invest-ment, and subsequently act as a barrier to sport participation (Bevan et al., 2021; Krane & Kaus, 2014; Lunde & Gattario, 2017; Mosewich et al., 2009; Petrie, 2020; Rudd & Carter, 2006; Sabiston et al., 2019). In addition, dissatisfaction with the body in the sport environment can thwart the development of positive body image and may be associated with the development of clinical eating disorders (Kong & Harris, 2015). Given the significant evidence that body image influences sport expe-riences and participation rates, there is a critical call-to-action for the development and implementation of strategies that prioritize both the management of body image concerns and serve to reduce eating disorder risk among adolescent girl athletes (Bar et al., 2016; Joy et al., 2016; Koulanova et al., 2021; Petrie, 2020). By addressing body image con-cerns in sport, researchers will be addressing Sport Canada's call for the expansion and sharing of knowledge, practices, and innovations to enable quality sport experiences for girls (Sport Canada, 2017).

1.2. Eating disorder prevention in sport

Since negative indicators of body image (e.g., body dissatisfaction) have been established as robust risk factors for the development of eating disorders (Petrie, 2020; Stice et al., 2011), it is common for body image indicators to be targets of intervention in sport. Bar et al. (2016) reviewed eating disorder prevention initiatives for athletes and deter-mined that selective, primary interventions with multiple targets and an interactive multimodal approach were most effective at reducing risk factors associated with eating disorders. However, Bar et al. (2016) describe a historical resistance within the sport community to facilitate and participate in research focused on eating disorders, given negative connotations placed on the sport context as contributing to disordered eating risk. These limits in collaboration between the research and practical sport community can hinder quality experiences for girls and women in sport. Extending this review, Sandgren et al. (2020) deter-mined that just over 75% of athlete interventions reported successfully reducing or preventing disordered eating symptoms among girls and women in sport. Yet, the current interventions were limited by the mode of delivery and lacked participant evaluation data, as well as the engagement of sport system stakeholders – thereby hindering the scaling and implementation of these interventions into community-based settings.

While the reviews of current sport-specific eating disorder preven-tion initiatives among girls and women help to identify intervention feasibility, accessibility, and efficacy, the reviews fall short on exploring the in-depth characteristics, content, and features of sport-specific body image interventions targeting adolescent girls in sport. Further, the apparent limited engagement of sport stakeholders is an overt barrier to addressing the declining rates in girls' sport particip ation and the quality of their sport experiences. To bridge the gap between current research evidence and practice, researchers have called for a systems-level approach that considers the roles of governing sport organiza-tions and stakeholder partnerships (Koulanova et al., 2021). Specif-ically, the integration of stakeholder perspectives is vital to the alignment, refinement, and uptake of athlete-specific evidence-based body image and eating disorder reduction initiatives.

1.3. Present investigation

In partnership with the National Eating Disorder Information Centre (NEDIC; Canada), this scoping review was conducted to systematically review and evaluate the nature and characteristics of sport-specific body image and disordered eating prevention initiatives for adolescent girls. For the purposes of this research, the authors use "body image and disordered eating prevention" to capture any selective prevention pro-gramming or initiatives that target the reduction of negative body image indicators, the enhancement of positive body image indicators, and/or the reduction of disordered eating symptoms or eating disorder psy-chopathology. Aligning with scoping review recommendations in sport and exercise psychology recently published by Sabiston and colleagues (2022), national, provincial, and local sport system stakeholders were involved in the study as partners and contributed their perspective to inform future body image interventions, programming, and initiatives[1] targeting adolescent girls involved in sport.

2. Methods

The scoping review process was conducted according to the estab-lished criteria and guidelines from the Preferred Reporting Items for Systematic reviews and Meta-Analyses extension for Scoping Reviews (PRISMA-ScR; Tricco et al., 2018) and a 6-step scoping review method, which includes: [1] identifying the research question; [2] defining the scope of the review; [3] study selection; [4] charting the data; [5] reporting the results; and [6] stakeholder consultation. Methods of analysis and inclusion criteria were specified in advance and docu-mented in a protocol. Due to the evolving and iterative nature of research co-developed with non-academic community partners, the re-view protocol was not registered a priori.

2.1. Identifying the research question

The research questions guiding this review were: What is the existing state of knowledge on body image and/or disordered eating prevention for adolescent girls in the sport environment? What are the character-istics of existing interventions (e.g., frequency, mode of delivery, con-tent)? What are the main outcomes of existing prevention initiatives?

2.2. Defining the scope of the review

In partnership with NEDIC, this scoping review aimed to examine the nature, characteristics and features of body image and disordered eating interventions targeting adolescent girls in sport, and involve sport stakeholders in the integration of the results. Study selection criteria were defined a priori and applied by two researchers to the title/ab-stract, followed by full-text review. To be included in the review, articles had to fulfill the following criteria: published in English as of April 2020, reported a programmatic intervention focused on selective prevention,

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[1] The scope of the review is focused on selective prevention initiates, though we use the terminology of intervention, programming, and initiatives, inter-changeably, in light of the non-academic partnered research approach.

specific to improving indices of positive body image, reducing indices of negative body image, and/or reducing disordered eating symptoms/risk, and utilized by female/girl-identifying[2] youth and adolescents engaged in organized sport (≤18 years of age). Studies that included both female and male samples required reporting of female-specific intervention effects to be included. Peer-reviewed and original quantitative, qualitative, and mixed-method studies, as well as grey literature (i.e., dissertations, theses, conference proceedings, editorials, commentaries), were included. Due to the broad and comprehensive outcome goals of the study, all articles were included regardless of earliest publication date. Articles were excluded if they were not written in English or an English version could not be located, and/or if full-texts were not available.

2.3. Study selection

A priori eligibility criteria were developed with the assistance of a librarian and used to create a standard checklist for study selection for screening titles, abstract, and subsequently full-text articles. Title and abstract review were completed using the systematic and scoping review web-based application, Rayyan, to organize the data and for blinding of the results between collaborators. Eligibility assessment was performed independently by two reviewers (KS and a research assistant) according to the checklist. All decisions were tracked automatically on Rayyan. Disagreements between reviewers were resolved by discussion between the two reviewers, and inclusion of a third reviewer (EP) to finalize decisions if no agreement could be reached.

Studies were identified via searching the following electronic databases: SPORTDiscus, EMBASE (accessed via Ovid), PsycINFO (accessed via Ovid), and MEDLINE. The specific search terms are as follows: "eating disorders" OR "eating disorder" OR "disordered eating" OR "body image" OR "body image/" OR "body image disturbances" AND "athlete*" OR "athlete/" OR "sport*" OR "sport/" AND "prevention" OR "intervention*" OR "program" (see Appendix A for list of search terms). Additionally, reference lists of included articles and previous systematic reviews (e.g., Bar et al., 2016; Sandgren et al., 2020) were hand searched. A public call for assistance with the collection of in-press and unpublished work was supported by the Sport Information Resource Centre (www.sirc.ca).

2.4. Charting the data

A data extraction framework was used to chart relevant information on key characteristics and detailed study information from the eligible studies, including study design, participant details and sample size, program name and intervention description, mode of delivery, topics included and content covered, outcome measure(s), and summary of findings. Furthermore, authors of the included articles were contacted, and requests were made for the collection of any raw intervention materials. These materials were reviewed and summarized in the charting.

2.5. Reporting the results

The synthesis included quantitative analyses (e.g., means, standard deviation, frequencies) to summarize the characteristics of sport-specific body image and disordered eating interventions. The results are included in both a table and a descriptive format that aligns with the review's objective of evaluating the nature and characteristics of current sport-specific body image and disordered eating interventions in adolescent girls. Main outcome data was also reported to contextualize the descriptive summaries of intervention contents and delivery.

2.6. Stakeholder consultation

Following research ethics board approval and drawing on recent guidelines (Sabiston et al., 2022),an initial stakeholder topic consultation was held to obtain feedback on the research interests from NEDIC and the research team. A stakeholder input meeting was used to gather input on the research question(s), search terms, eligibility criteria, and the necessary details to extract from the evidence. The partnership between NEDIC and the researchers was maintained throughout the review. Following data extraction and original interpretation of findings, stakeholder reaction meetings were held to obtain feedback on the review findings and to identify future program development plans. The follow-up stakeholder reaction meetings involved focus groups conducted with a broad group of national, provincial, and local sport stakeholders. Relevant stakeholder groups were identified through publicly available contact information of local and national sport organizations, networks available to national, provincial, and municipal partner organizations (e.g., Canadian Women & Sport, Ontario Physical and Health Education Association, Sport Information Resource Centre), digital media presented on the research institution's website, as well as snowball sampling.

Stakeholder reaction meetings (i.e., focus groups) were conducted virtually and included semi-structured discussions with groups of two to seven individuals. The focus groups were co-facilitated by the primary author (KS) and a NEDIC representative (AM). Within each focus group discussion, a modified Delphi approach (Lindstone & Turoff, 1975) was used to rate the importance and feasibility of the scoping review's intervention topics, study designs and outcomes, and to provide an overall ranking for each of the research questions. Stakeholders were also asked open-ended follow-up questions regarding the dissemination and uptake of a body image program and resources; perceived barriers to the use or implementation of a body image program and resources; factors and trends in the larger environment that might influence implementation; and organizational actions and changes that are required to implement a body image program and resources. Participants received a $25CAD gift card as compensation.

Focus groups were audio-recorded and transcribed verbatim. The transcriptions from the audio-recorded focus groups were analyzed in an iterative process by the primary author (KS) and research assistant, and in consultation with NEDIC partners. Responses to structured research questions were consolidated and analyzed using frequencies. The first author led the analysis of open-ended questions to identify perceived barriers, as well as factors and trends, and connect overarching themes across stakeholder groups through an inductive approach. Anonymized sample quotes that represented the themes were extracted from the transcripts. Taken together, data from the focus groups were used to identify the core components that warrant inclusion for future body image and disordered eating prevention programs targeting adolescent girls in sport.

3. Results

The database search yielded a total of 1792 records (Figure 1), identified in MEDLINE ($n = 477$), PsychINFO ($n = 418$), Embase ($n = 704$), and SPORTDiscus ($n = 193$). After removing duplicates, 1233 titles and abstracts were screened for eligibility and 52 potentially relevant citations were retrieved in full-text. Following full-text review, 11 articles were included in this review. A further two articles were identified from the reference lists of included articles and previous systematic reviews (Bar et al., 2016; Sandgren et al., 2020). Materials for another project that the authors were aware of at the time of the search became available during the review process. The final pool consisted of 14 articles (see Figure 1). Descriptions of each included study and intervention resources are described in Table 1 and Table 2.
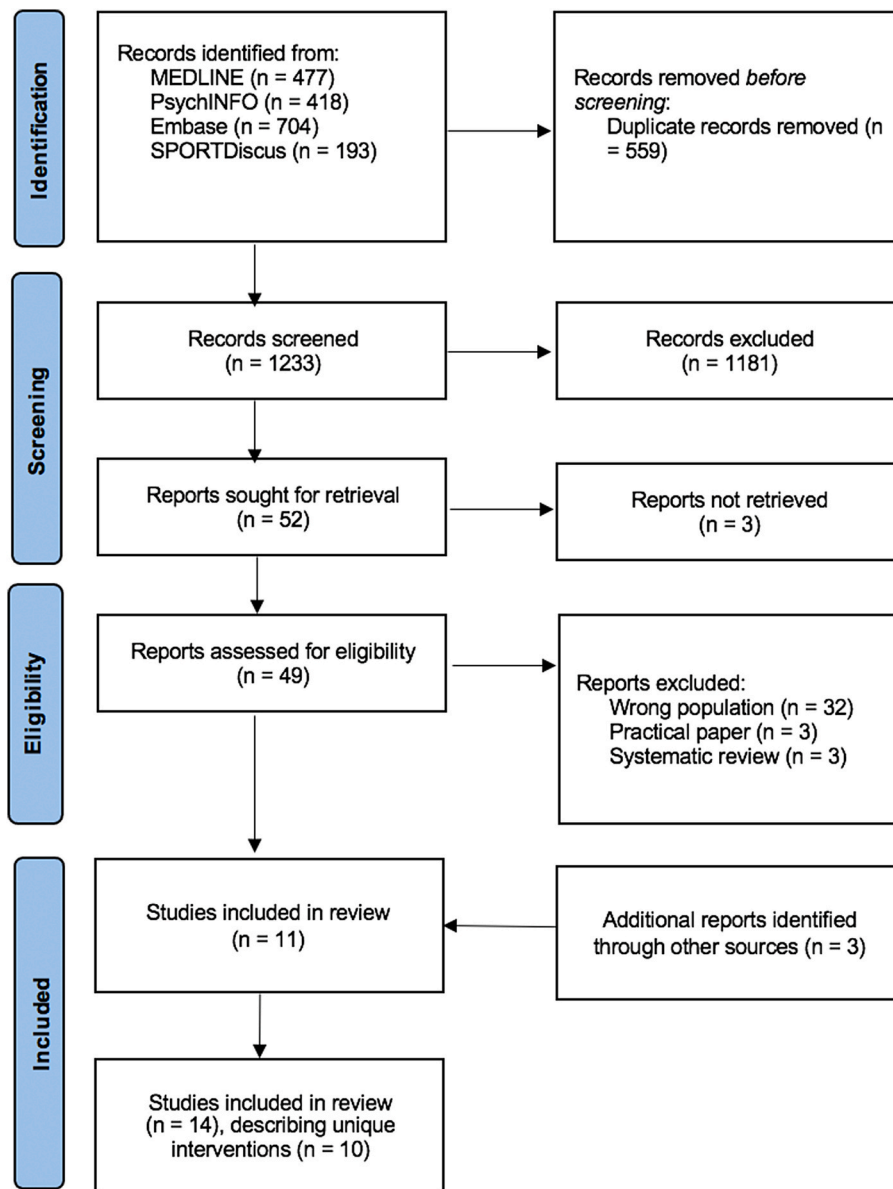
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[2] While we recognize that sex (i.e., female) and gender-identity (i.e., girl-identifying) are conceptually distinct, sex and gender will be used interchangeably in the present review due their limited differentiation in much of the literature presented.

Figure 1. PRISMA flow diagram for scoping reviews. *Source*: Adapted from (Tricco et al., 2018).

3.1. Study characteristics

The included studies were published between 1996 and 2020, in addition to a study previously identified through an unpublished literature call that was then published in 2021 (Hirsch et al., 2021). The majority of the studies were conducted in the United States (64.3%), Canada (28.6%), and Norway (7.1%). Twelve studies assessed participants pre- and post-intervention, and six studies included at least one additional follow-up assessment ranging from 6-week to 36-month after intervention completion ($M = 46.33$, $SD = 55.41$ weeks). Four studies and one editorial reported on the same intervention (Athletes Targeting Healthy Exercise and Nutrition Alternatives [ATHENA]; Elliot et al., 2004, 2006, 2008; Gómez, 2004; Ranby et al., 2009). Of these, two studies reported on pre-test and immediate post-test effects of the intervention using the same sample of participants (Elliot et al., 2004, 2006), whereas one reported on the post-high school follow-up (1- to 3-year) effects of the intervention using a subsample of the participants (Elliot et al., 2008). Ranby et al. (2009) extended this work by examining the replication of ATHENA in three cohorts of participants and the mechanisms through which ATHENA produced outcomes immediate

post-test and 9-month follow-up. Gómez's (2004) editorial reported on the original results from the randomized trial by Elliot et al. (2004).

Of the 14 studies, eight were reported as randomized controlled trials (Elliot et al., 2006, 2008, 2004; Buchholz et al., 2008; Kaplan, 2014; Laramée et al., 2017; Martinsen et al., 2014; Ranby et al., 2009); one was a non-randomized trial with two treatment arms (Doyle-Lucas & Davy, 2011); four were non-randomized trials with one single treatment arm (Brown et al., 2016; Hirsch et al., 2021; Kaufman et al., 1996; Piran, 1999); and one was an editorial (Gómez, 2004).

3.2. Participants

Of the 12 studies[3] that reported on unique participant groups, a total

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[3] Given the presence of multiple reports on the same intervention and/or sample in this review, when referring to 'studies', we refer to the count of articles included within the review ($n = 14$). When referring to 'interventions', we refer to the count of distinct intervention programs delivered to participants that are included within the review ($n = 10$).

Table 1
Included studies evaluating body image and disordered eating prevention for adolescent girls in sport.

Study	Participants			Intervention version control/comparison	Intervention components				
	Country	N, sex (M_{age}), % retention	Sport type; level		Frequency (duration)	Mode of delivery (theory/ framework)	Topics included	Outcome measures	Summary of outcomes
Brown et al. (2016)	United States	29 females (range: 14–18 years), 61.7%	Track and field; high school	FT educational intervention	4 sessions, every 3 weeks, during early sport season (3 months)	Face-to-face peer-led group sessions with manuals, workbooks, and videos (theory/ framework NR)	FT, nutrition, dietary energy intake/balance/availability, impact on menstrual function and bone health, body image and healthy body ideals [a]	AMAQ, triad risk factor items, BMI-SMT	FT knowledge significantly increased from pre- to post-intervention among participants. No change detected in body image or knowledge of the effect of energy availability on menstrual irregularity and bone health.
Buchholz et al. (2008)	Canada	62 females (13.4 ± 1.45 years), 58%	Gymnastics; competitive club	'BodySense' educational prevention program ($n = 31$) versus no planned exposure ($n = 31$)	One-off session (duration NR)	Face-to-face health-professional-led group session with informational resources (theory/framework NR)	Eating attitudes and beliefs, accurate information about body health, unique body size and shape, resisting pressures to diet, physical activity for enjoyment, self-esteem, encouraging assertion in athletes, stress management, modeling attitudes and behaviours, and promoting balance between sport participation and life outside of sport	EAT-26, CISSS, BESAA, SATAQ, Self-Efficacy over Dieting scale	IG reported reduction in perceived pressure to be thin, though no significant changes were found in body esteem, self-efficacy over dieting pressures, eating attitudes and behaviours, or awareness and internalization of appearance ideals from pre- to post-intervention.
Doyle-Lucas and Davy (2011)	United States	210 females and males (sex-specific n's NR; 15.4 ± 0.1 years), 65%	Ballet; summer intensive school programs	'Nutrition for Optimal Performance' educational program ($n = 146$) versus summer-school as usual ($n = 64$)	3 × 60 min consecutive sessions, during summer (3 days)	Face-to-face researcher-led group sessions using DVD-series with assessments and worksheets (SCT and HBM)	FT, nutrition principles, healthy behavioural habits, hydration	SNKBQ, EAT-26, FFQ	DE increased in IG and decreased in CG from pre-intervention to follow-up. Nutrition knowledge, perceived risk of FT, and self-efficacy significantly increased in IG compared with CG from pre-test to follow-up. No change detected in abnormal eating behaviours, though changes in nutrition were reported.
[b] Elliot et al. (2004, 2006); Gómez (2004)	United States	668 females (15.35 ± 1.2 years), 72%	Various; high school	'ATHENA' educational program ($n = 337$) versus no planned exposure ($n = 331$)	8 × 45 min weekly sessions, during season (8 weeks)	Face-to-face peer and coach-led group workshops with scripted manuals and workbooks (theory/framework NR)	Consequences of substance use and DE practices, sports nutrition, effective exercise training, mood/depression prevention, media literacy, healthy norms and societal pressures to be thin, self-esteem, refusal skills	Items from EAT-26, CES-D, OSIQ, RSES, EDI, substance abuse items	Recent diet pills usage and intentions towards future DE behaviours and body-shaping substance use significantly decreased in IG following sport season. Nutrition knowledge, dietary habits and exercise training self-efficacy significantly improved in IG. No change detected in self-esteem and positive body image.
[b] Elliot et al. (2008)	United States	400 female graduates (>18 years), 53%	Various; high school	'ATHENA' educational program ($n = 203$) versus no planned exposure ($n = 197$)	8 × 45 min weekly sessions, during season (8 weeks)	Face-to-face peer and coach-led group workshops with scripted manuals and workbooks (theory/framework NR)	Consequences of substance use and DE practices, sports nutrition, effective exercise training, mood/depression prevention, media literacy, healthy norms and societal pressures to be thin, self-esteem, refusal skills	Items from EAT-26, CES-D, OSIQ, RSES, EDI, substance abuse items, Stunkard Figure Rating Scale	Use of marijuana and alcohol, diet pills, diuretics, laxatives, and self-induced vomiting became less prevalent over time in both groups. When asked to select the healthiest and most attractive female physique, IG indicated a significantly heavier

(*continued on next page*)

Table 1 (*continued*)

Study	Participants			Intervention version control/comparison	Intervention components				
	Country	N, sex (Mage), % retention	Sport type; level		Frequency (duration)	Mode of delivery (theory/framework)	Topics included	Outcome measures	Summary of outcomes
Hirsch et al. (2021)	Canada	33 females (12.58 ± 1.09 years), 87%	Soccer; club	'Youth-Female Athlete Body Project' body image promotion program	4 × 90 min weekly sessions, midseason (4 weeks)	Face-to-face researcher-led group sessions with in-session activities and home exercises (CDT)	Sport-specific and societal thin-ideal, impacts of social media, resisting thin ideal pressures	SATAQ-4R, EIS, FTQ, pictorial body image instrument	body image than CG at follow-up. Significant decreases in internalization of thin body/low body fat pressures, muscular figure pressures, and fat talk between pre- and post-intervention. Functional satisfaction improved between pre- and post-intervention. No change detected for aesthetic satisfaction and perceived body size.
Kaplan (2014)	United States	22 females (15.96 ± 1.6 years), 96%	Ballet; recreational dance studios	'The Pirouette Program' educational body image enhancement program (n = 11) versus control group (n = 11)	4 × 45 min weekly sessions, in studio (4 weeks)	Face-to-face research-led group sessions with homework (theory/framework NR)	Weight and culture, body acceptance, development of identity, self-esteem	BIQ, EAT-26, SATAQ-3, DIIS, RSES	Significant improvements in self-esteem and attitude towards disordered eating, and reductions in body image discrepancy, de-emphasis on thin-ideal, and a less physique-focused identification with ballet within IG from pre-test to 6-month follow-up. However, study was under-powered and did not compare between-groups.
Kaufman et al. (1996)	United States	8 females (14.92 ± 0.96 years), 21%	Ballet; elite professional ballet school	Nutrition and ED educational intervention in the form of counselling	Lecture series, figures NR; and between four and eight sessions with professionals to at-risk athletes (1 year)	Face-to-face health and clinical professional-led group lectures One-to-one sessions with athletes at-risk for ED-related symptoms (CBT for EDs)	Nutrition, energy requirements, ED knowledge, cultural pressures to be thin, healthy ways to lose weight, healthy practices (e.g., warming up) Thought patterns and coping with stress, resisting social and cultural pressures that influence healthy exercise and eating routines	B-PAR, EAT-26, OSIQ	EAT-26 and dieting behaviour increased overall in participants from pre-intervention to follow-up. No change over time in bulimic tendencies and oral control.
Laramée et al. (2017)	Canada	39 females (range: 12–17 years), 56%	Aesthetic sports; club	Behaviour change and nutrition theory-based education intervention (n = 27) versus nutrition education only (n = 12)	3 × 1 h weekly sessions, during training hours or lecture periods (3 weeks)	Face-to-face dietitian-led group sessions, using persuasive communication, active learning, and observational modelling (TPB)	Nutritional needs and hydration, daily healthy eating, sport nutrition, social beauty ideals, body image	Nutrition and TPB restrictive dietary behaviour measure	Significant difference between the IG and CG in intentions to use restrictive dietary behaviours to lose weight over time. Nutrition knowledge significantly increased in both groups from baseline to follow-up. No significant differences between group for changes in attitude, subjective norm, and perceived behaviour control over time.
Martinsen et al. (2014)	Norway	439 of which females [n = 148] and males [n = 291] (16.47 ± 0.3 years), 94%	Various; elite sport high school	Health, body, and sport performance intervention program (nfemale = 87) versus no planned exposure (nfemale = 61)	4 × 90 min sessions, during school year (1 year)	Face-to-face researcher-led group lectures with assignments, teamwork exercises, homework, and social media assignments (SCT, CDT, and ELM)	Self-esteem, self-confidence, motivation, growth and development, restitution, sports nutrition and EDs in relation to health and performance	EDI-2, CSE, EDE	IG significantly reduced dieting behaviour and risk of reporting ED symptoms from pre- to post-intervention and at follow-up. 16 of the 26 IG athletes that met criteria for an ED at pre-test no

Table 1 (*continued*)

Study	Participants			Intervention version control/comparison	Intervention components				
	Country	N, sex (M_{age}), % retention	Sport type; level		Frequency (duration)	Mode of delivery (theory/framework)	Topics included	Outcome measures	Summary of outcomes
									longer fulfilled the criteria at follow-up. No new clinical ED cases found in IG compared with eight new clinical ED cases in CG at follow-up. No difference in body dissatisfaction or self-esteem between groups over time.
Piran (1999)	Canada	198 females (14.19 ± 0.92 years), 93%	Ballet; competitive ballet school	Multifaceted (school environment) ED educational prevention program	2-10 sessions during the school year, repeated three times with different groups (1 year)	Face-to-face researcher-led group meetings and focus groups integrated into school hours (WHO health promotion framework)	Body weight and shape preoccupation	DSED, EDI, EAT-26	Significant reductions in DE patterns, disturbed attitudes about eating and body shape, and significant increases in healthy eating patterns detected from pre- to post-intervention among participants.
[a] Ranby et al. (2009)	United States	817 females (15.35 ± 1.2 years), 81%	Various; high school	'ATHENA' educational program (n = 406) versus no planned exposure (n = 411)	8 × 45 min weekly sessions, during season (8 weeks)	Face-to-face peer and coach-led group workshops and lectures with scripted manuals and workbooks (theory/framework NR)	Proper nutrition for sport performance, negative effects of body shaping substances and DE, norms and beliefs about societal messages, resisting unhealthy weight loss behaviours and endorse healthy norms	Items from EAT-26	Social norms and self-efficacy for healthy eating were found to mediate the effects of the intervention on the use of body-shaping drugs and vomiting at follow-up.

Note.

[a] Body image discussion modelled after the athlete modified health weight intervention (Carolyn Black Becker et al., 2012);

[b] Multiple studies conducted on same intervention; Body image discussion modelled after the athlete modified Health Weight Intervention (Carolyn Black Becker et al., 2012); AMAQ, adolescent menstrual attitude questionnaire; ATHENA, athletes targeting healthy exercise and nutrition alternatives; B-PAR, Bouchard three-day physical activity record; BESAA, body-esteem scale for adolescents and adults; BIQ, body image ideals questionnaire; BMI-SMT, body mass index silhouette matching test; CBT, cognitive behavioural theory; CDT, cognitive dissonance theory; CES-D, center for epidemiological studies – depression; CG, control group; CISSS, climate in sport setting scale; CSE, contingent self-esteem scale; DE, disordered eating; DIIS, dance identity internalization scale; DSED, diagnostic survey for eating disorders; EAT-26, eating attitudes test – 26; EDI, eating disorder inventory; EIS, embodied image scale; ED, eating disorder; EDE, eating disorder examination; ELM, elaboration-likelihood model; FFQ, food frequency questionnaire; FT, female athlete triad; FTQ, fat talk questionnaire; HBM, health belief model; IG, intervention group; NR, not reported; NRCT, non-randomized controlled trial; OSIQ, offer self-image questionnaire; RCT, randomized controlled trial; RSES, Rosenberg self-esteem scale; SATAQ, sociocultural attitudes towards appearance questionnaire – 3; SATAQ-4R, sociocultural attitudes towards appearance questionnaire-4 revised; SCT, social cognitive theory; SNKBQ, sports nutrition knowledge and behaviour questionnaire; WHO, World Health Organization.

of 4499 athletes (*M* = 225, *SD* = 260; range: 23–1668 athletes) completed baseline data collection. Attrition of participants occurred between baseline to post-intervention (41%), resulting in complete data at post-intervention for 1516 intervention participants (60% retained) and 1139 control participants (57% retained). The percentage of participants retained ranged from 21% to 96% across all studies (*M* = 70%, *SD* = 22% retention). The age of the samples ranged from 11 to 18 years (*M* = 14.96, *SD* = 0.98 years).

Excluding the editorial by Gómez (2004), eleven studies included adolescent female athletes only, and two studies included both adolescent female and male athletes with sex-stratified results (Doyle-Lucas & Davy, 2011; Martinsen et al., 2014). Five studies included high school athletes, four studies included elite sport school athletes, three studies included competitive club athletes, and one study included recreational athletes. Of these, over half reported on homogenous groups of sport (*n* = 7) including ballet (*n* = 4), track and field (*n* = 1), soccer (*n* = 1), and gymnastics (*n* = 1). The remaining studies (*n* = 6) included heterogenous athlete samples from various team and individual sports. Furthermore, one study excluded athletes that met diagnostic criteria for an eating disorder before the start of the intervention (Martinsen et al., 2014).

3.3. Nature of interventions

Six interventions reported use of theoretical frameworks to inform program development (e.g., social cognitive theory, cognitive behavioural therapeutic approaches, cognitive dissonance theory; Doyle-Lucas & Davy, 2011; Hirsch et al., 2021; Kaufman et al., 1996; Laramée et al., 2017; Martinsen et al., 2014; Piran, 1999), while the remaining four were atheoretical (Brown et al., 2016; Buchholz et al., 2008; Elliot et al., 2004; Kaplan, 2014). All studies reported a central aim of promoting or enhancing body image indices, preventing disordered eating behaviours, and/or educating or increasing eating disorder knowledge in adolescent athletes. Four interventions were described as addressing topics relating to self-esteem, body image, prevention of disordered eating, and nutrition (Buchholz et al., 2008; Elliot et al., 2004; Laramée et al., 2017; Martinsen et al., 2014); two interventions addressed body image, prevention of disordered eating, and nutrition but not self-esteem (Brown et al., 2016; Piran, 1999); one intervention addressed self-esteem, body image and prevention of disordered eating but not nutrition (Kaplan, 2014); one addressed prevention of disordered eating and nutrition but not body image and self-esteem (Kaufman et al., 1996); one intervention addressed body image only (Hirsch et al., 2021); and one intervention addressed nutrition education only (Doyle-Lucas & Davy, 2011).

Five interventions were led and facilitated by researchers (Doyle-Lucas & Davy, 2011; Hirsch et al., 2021; Kaplan, 2014; Martinsen et al., 2014; Piran, 1999). Four of these had relatively high participant retention rates (>87%) after the delivery of a 4-week (Hirsch et al., 2021; Kaplan, 2014) to year-long intervention (Piran, 1999), and at 9-month follow-up from a year-long intervention (Martinsen et al., 2014). One intervention was both coach-facilitated and peer-led (Elliot et al., 2004) and another was peer-led only (Brown et al., 2016), both of which reported lower participant retention rates (range: 62–72%) after an 8-week and 3-month long intervention. The remaining three interventions were led by health and clinical professionals, but reported low participant retention rates (range: 21–58%) after a one-off workshop session (Buchholz et al., 2008) or 3-month to 1-year following a 3-week long intervention (Laramée et al., 2017) and a 1-year long intervention (Kaufman et al., 1996). One intervention provided education to the intervention facilitators (e.g., coaches, peers) via a training manual (Brown et al., 2016), and three interventions offered an orientation or training session for facilitators (Brown et al., 2016; Elliot et al., 2004; Hirsch et al., 2021). Additionally, two interventions provided additional educational guidelines to the parents (Buchholz et al., 2008), coaches (Buchholz et al., 2008; Martinsen et al., 2014), and staff

(Buchholz et al., 2008), and three interventions offered additional educational workshop sessions to parents (Buchholz et al., 2008), coaches (Buchholz et al., 2008; Martinsen et al., 2014), and staff (Piran, 1999).

All ten interventions were delivered face-to-face in the format of group sessions, with the total intervention duration ranging from a single one-off session to year-long intervention (*M* = 18.9, *SD* = 23.07 weeks). Four interventions delivered sessions weekly (Elliot et al., 2004; Hirsch et al., 2021; Kaplan, 2014; Laramée et al., 2017), whereas one delivered sessions over three consecutive days (Doyle-Lucas & Davy, 2011), and one delivered sessions every three weeks (Brown et al., 2016). Three year-long interventions did not report the frequency of intervention sessions delivered (Kaufman et al., 1996; Martinsen et al., 2014; Piran, 1999), and two did not report the total number of sessions delivered (Kaufman et al., 1996; Piran, 1999). One intervention offered a one-off sessional workshop for the athletes and a separate sessional workshop for both parents and coaches (Buchholz et al., 2008). The ten interventions reported an average of five sessions delivered to participants (*M* = 4.9, *SD* = 2.81; range: 1–10 sessions). The duration of each session was reported in six interventions and ranged from 45 to 90 min (*M* = 65, *SD* = 20.49 min).

While all ten interventions provided educational lectures or informational workshops, eight interventions included additional interactive activities and discussions to foster active learning and application of new abilities (Brown et al., 2016; Doyle-Lucas & Davy, 2011; Elliot et al., 2004; Hirsch et al., 2021; Kaplan, 2014; Laramée et al., 2017; Martinsen et al., 2014; Piran, 1999). For example, five provided workbooks/worksheets, journals or diaries (Brown et al., 2016; Doyle-Lucas & Davy, 2011; Elliot et al., 2004; Kaplan, 2014; Martinsen et al., 2014); four utilized video clips (Brown et al., 2016; Doyle-Lucas & Davy, 2011; Hirsch et al., 2021; Laramée et al., 2017); and two interventions included social media (Hirsch et al., 2021; Martinsen et al., 2014). However, interventions that utilized these supplementary intervention delivery methods were variable in participant retention rates (range: 56–96%), as well as the overall significance of their intervention outcomes. Additionally, three interventions noted using homework assignments as a follow-up to the sessions' topics (Hirsch et al., 2021; Kaplan, 2014; Martinsen et al., 2014). Another intervention used short-term health goals (e.g., eat breakfast daily) that the participants needed to complete before the next session (Elliot et al., 2004). Interventions that provided homework reported high participant retention rates (range: 72–96%) and most reported significant improvements in body image (Hirsch et al., 2021) and reductions in disordered eating psychopathology (Elliot et al., 2004; Martinsen et al., 2014).

Two interventions emphasized systemic changes in the sport organization's culture and conducted an multi-model intervention (e.g., ecological) rather than solely an athlete-specific intervention (Martinsen et al., 2014; Piran, 1999). Similarly, Buchholz et al. (2008) addressed the intervention group's local sport environments by providing a "fuel tank" box, stocked with high-energy snacks for the club to give to the athletes, an educational poster to hang in the lobby, a mini-resource library of educational books and videos, and eight issues of their educational newsletter mailed directly to the athletes' homes over three months post-sessional intervention.

3.4. Main study outcomes

3.4.1. Randomized controlled trials

Body Image. Of the 5 studies that examined multidimensional body image constructs (Buchholz et al., 2008; Elliot et al., 2004, 2006; Kaplan, 2014; Martinsen et al., 2014), there were no significant effects observed between groups across all assessment points. Yet, while Buchholz et al. (2008) reported no significant changes in body esteem and internalization and awareness of appearance ideals, the BodySense intervention was found to have a modest but significantly positive influence on participants' perceptions of pressure from within their sport

Table 2
Overview of Intervention Characteristics.

	Brown et al. (2016)	Buchholz et al. (2008)	Doyle-Lucas & Davy (2011)	Elliot et al. (2004)	Hirsch et al. (2021)	Kaplan (2014)	Kaufman et al. (1996)	Laramée et al. (2017)	Martinsen et al. (2014)	Piran (1999)
Theoretical										
Topics										
Body Image										
Disordered eating prevention										
Self-esteem										
Nutrition										
Supplementary methods										
Interactive activities										
Workbooks/worksheets/ journals or diaries										
Video clips										
Social media										
Multi-model/ecological intervention										
Intervention facilitator										
Researcher-facilitated										
Coach-facilitated										
Peer-led										
Health or clinical professionals										
Facilitator training										
Training manual or educational guidelines										
Orientation/training session										
Additional educational materials										
Coaches										
Parents										
Staff										
Workshops										
Athletes										
Coaches										
Parents										
Staff										
Control or comparison group										
Assessment time points										
Pre-test assessment										
Post-test assessment										
Follow-up assessment(s)										

Note. Gray boxes indicate criterion has been addressed in the intervention/program.

club to be thin compared with the control group. Another study was statistically underpowered due to small sample size and detected no significant differences in body image constructs between groups across all assessment points (Kaplan, 2014). However, their within-group findings revealed that intervention participants reported a healthier sense of body image, and reduced thin-idealization and dance identity internalization at 6-month follow-up compared to their pre-intervention scores. Lastly, while the short-term ATHENA intervention did not observe significant changes in positive body image between groups (Elliot et al., 2004, 2006), there were small but significant differences in figure representation such that intervention graduates were more satisfied with a heavier body image when presented with a spectrum of female physiques than control participants at their follow-up assessment (Elliot et al., 2008).

Disordered Eating Psychopathology. Of the eight randomized controlled trial studies, five reported statistically significant small to moderate reductions in disordered eating behaviours and attitudes for the intervention participants compared with control participants from pre-to post-intervention (Elliot et al., 2004, 2006) or from pre-intervention to 9-month follow-up (Ranby et al., 2009) and 1-year follow-up (Martinsen et al., 2014). Elliot et al. (2008) also reported a significant reduction in disordered eating behaviours and body-shaping drug use over a 1- to 3-year follow-up period. Another study reported significant reductions in intentions to use restrictive dietary behaviours to lose weight between the intervention and comparison groups from pre-intervention to 8- and 12-week follow-up (Laramée et al., 2017). Buchholz et al. (2008) reported no significant changes in self-efficacy over dieting pressures or eating attitudes and behaviours in the intervention participants at post-intervention, adjusting for their measure at pre-intervention, as compared to the control participants. Similarly, another study was statistically underpowered due to small sample size, and detected no significant differences in disordered eating attitudes and behaviours at both within and between groups across all assessment points (Kaplan, 2014).

Notably, the five studies that indicated significant reductions in disordered eating psychopathology or intentions to use restrictive dietary behaviours between groups across time were reported on only

three distinct interventions (Elliot et al., 2004; Laramée et al., 2017; Martinsen et al., 2014). All three interventions were described as addressing topics relating to self-esteem, body image, prevention of disordered eating, and nutrition and were characterized by having relatively high participant retention rates ($M = 71\%$, $SD = 15\%$). However, these interventions were variable in frequency (range: 3–8 sessions), intervention duration (range: 3–52 weeks), and length of the intervention sessions (range: 45–90 min).

Self-Esteem. Of the four randomized controlled trials that measured self-esteem (Elliot et al., 2004, 2006; Kaplan, 2014; Martinsen et al., 2014), there were no significant differences detected in self-esteem between groups across time. However, Kaplan (2014) reported a significant increase within intervention participants level of self-esteem between pre-test and 3-month follow-up assessment.

Knowledge and Attitudes. While most studies reported a central aim of educating or increasing knowledge specific topics such as body image, eating disorder, self-esteem, and nutrition, very few studies provided intervention effects for knowledge. Of the three studies that reported these findings, there were favourable and significant improvements in nutrition knowledge from pre-to post-intervention (Elliot et al., 2004, 2006) and after a 8- to 12-week follow-up (Laramée et al., 2017).

3.4.2. Non-randomized trials

Body Image. Of the two non-randomized controlled trials that examined changes in body image (Brown et al., 2016; Hirsch et al., 2021), only one study reported significant decreases in negative body image constructs (i.e., thin/low body fat internalization, muscular figure internalization) and significant improvements in positive body image (i.e., body functional satisfaction) between pre- and post-intervention (Hirsch et al., 2021). These interventions were considered non-randomized controlled trials with one single treatment arm, and the successful intervention was a stand-alone intervention (i.e., solely focused on improving body image).

Disordered Eating Psychopathology. Of the three non-randomized controlled trials that examined disordered eating and dieting behaviours (Doyle-Lucas & Davy, 2011; Kaufman et al., 1996; Piran, 1999), one

reported statistically significant decreases in disordered eating psychopathology in participants from pre-to post-intervention (Piran, 1999). The other two revealed unfavourable findings and reported significant increases in disordered eating behaviours in intervention participants from pre-intervention to 6-week follow-up (Doyle-Lucas & Davy, 2011) and 1-year follow-up (Kaufman et al., 1996). The less successful theoretical-based interventions were accompanied by lower participant retention rates (range: 21–67%) and placed a large emphasis on nutritional education, but were variable in intervention session (range: 3–8 sessions) and duration (range: 1–52 weeks). Kaufman et al. (1996) was also the only intervention to provided supplementary guidelines to achieve "healthy weight loss",[4] in addition to offering individual professional therapy to participants.

Knowledge and Attitudes. Two non-randomized controlled trials examined changes in participant knowledge. One non-randomized controlled trial, with one treatment arm, significantly increased participants' disordered eating knowledge from pre-to post-intervention (Brown et al., 2016). However, no change was detected in knowledge of the effect of energy availability on menstrual irregularity and bone health. The other non-randomized controlled trial, with two treatment arms, reported significant improvements in nutrition knowledge, perceived susceptibility to the Female Athlete Triad (e.g., understanding the consequences and risks of the Female Athlete Triad, as well as athletes' susceptibility), and self-efficacy for adopting and maintaining healthier dietary habits in intervention participants relative to control participants (Doyle-Lucas & Davy, 2011).

These interventions that reported significant improvements in knowledge and attitudes were characterized by a moderate retention rate (range: 62–65%) and provided a similar session frequency (range: 3–4 sessions), but were variable in duration (range: 1–12 weeks). Additionally, the interventions varied in the topics covered and were described as addressing body image, prevention of disordered eating, and nutrition but not self-esteem (Brown et al., 2016), or nutrition education only (Doyle-Lucas & Davy, 2011).

3.4.3. Qualitative data on participant experiences

Four studies reported qualitative data on participants' post-intervention experiences. In one study, 69% of participants reported enjoying the educational intervention, reported it worthwhile, and would recommend to future teams (Brown et al., 2016). As a result of the education, just over half indicated that they feel better about their bodies and reported making changes their diet. Yet, while some participants felt the peer-instructors could relate to them well, 86% would have preferred an adult coach or teacher rather than peer-instructor. Reporting on compliance, fewer than 25% of participants reported the mental training assignments to be useful and just under 30% of the athletes reported having used the supplementary diary during the intervention (Martinsen et al., 2014). Hirsch et al. (2021) also included a qualitative evaluation of the Y-FAB program and revealed perceived positive changes to body image knowledge, self-confidence, and team cohesion, as well as resisting thin-ideal norms. Participants also provided recommendations for future implementations and suggested changes with respect to session format and home exercises. Finally, while all participants reported the intervention activities interesting and educational, 73% of participants would have preferred a longer program (Kaplan, 2014).

3.5. Stakeholder consultation

To capture a range of stakeholder perspectives, a total of 124

stakeholders were contacted, including national ($n = 15$), provincial ($n = 57$), local/club-level sport organizations ($n = 9$), as well as government ($n = 14$), education ($n = 9$), non-profit sport sectors ($n = 20$). Fifty-nine representatives agreed to attend a meeting and 18 virtual focus groups were organized with mixed sport system stakeholder groups.

The online stakeholder reaction focus groups included sport system stakeholders from Ontario ($n = 24$, 40.7%), British Columbia ($n = 13$; 22.0%), Alberta ($n = 13$; 22.0%), Nova Scotia ($n = 4$; 6.8%), Québec ($n = 3$; 5.1%), and Saskatchewan ($n = 2$; 3.4%). Stakeholders indicated their involvement at the national ($n = 10$; 16.9%), provincial ($n = 25$; 42.4%), and local sport level ($n = 7$; 11.9%) with several others employed in the municipal ($n = 5$; 8.5%), education ($n = 4$; 6.8%), and not-for-profit ($n = 8$; 13.6%) sport sectors. Further, several stakeholders indicated their involvement in aesthetic sports (i.e., gymnastics, dance, synchronized swimming, diving, skating, cheerleading; $n = 11$; 18.6%) and non-aesthetic sports (i.e., basketball, volleyball, karate, soccer, athletics, ringette, swimming, skiing, soccer, field hockey, softball, speed skating, hockey; $n = 31$; 52.5%) and have held multiple roles within their sport organization (e.g., varsity or national-level athlete, coach, official, volunteer, board of director member). Focus groups lasted between 75 and 95 min ($M = 85.44$, $SD = 6.87$ min).

Overall, there was considerable consensus across all stakeholder groups that there is a lack of body image resources available within their sport organization and many ($n = 56$; 94.9%) were unaware of any publicly available resources. There was also little knowledge about body image and eating disorders, with most of their current understanding derived from education on diet and nutrition (e.g., National Coaching Certification Program [NCCP] Sport Nutrition module, Obesity Canada, sport nutritionists). The stakeholder feedback generally supported the designs and methods of the interventions analyzed in the scoping review. The ranks assigned to the intervention materials are presented in Table 3.

3.5.1. Effective lesson planning

While a large proportion of stakeholders ($n = 24$; 40.7%) prefer an athlete-specific program with multiple sessions as compared to a single session or one-off materials, 71.2% ($n = 42$) suggested that an effective program would include the option to add sessions based on availability and identified need. It was suggested that the frequency of the sessions is determined with considerations of time and space available, and several stakeholders stressed that a single session might not be enough to create any meaningful change. To supplement the program, stakeholders proposed that individual materials may be used to promote and educate their organization on the topics using their websites or monthly newsletters.

3.5.2. Delivery methods

The instructional delivery methods were evaluated based on the sport organization's current program teachings and overall learning objectives. Many stakeholder representatives suggested that they currently use multiple delivery methods in their current programs since adolescent athletes have different learning styles and a single modality was deemed ineffective. Overall, the majority of stakeholders ($n = 41$; 69.5%) recommended a blended learning environment (i.e., use of all facilitation methods – educational videos, activities and exercises, handouts and discussions; see Table 3) where organizations can leverage a combination of approaches to maximize retention. This approach is ideal for organizations with diverse sport training settings and requirements. Additionally, eight stakeholders suggested an additional person-centered approach whereby the onus is on the athletes themselves to manage their body image, empowering the athletes to learn about these concepts and issues independently. This may be achieved through athlete-specific e-learning micromodules, with gamified activities and milestones. Stakeholders ($n = 18$; 30.5%) also recommended social media and public education as ways to create awareness and share targeted messaging to this age group.

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[4] We do not condone weight-normative approaches that promote the pursuit of weight loss and/or weight management, and opt to demarcate use of weight normative approaches with quotation marks (e.g., "healthy weight") for the purposes of this work.

The majority of stakeholders suggested that sessions should be coach-facilitated (*n* = 37; 62.7%), with the option to involve current or alumni athlete peer-leaders (*n* = 33; 55.9%). Stakeholders warned of the parents' involvement in the facilitation of the program and many (*n* = 46; 78.0%) reiterated that parents and guardians should be provided with accurate information on body image and disordered eating, in addition to "healthy weight", nutrition, and sports performance. While parents and guardians are considered critical to the sport environment and its effects on the adolescent athlete, reasons provided for parents' non-participation included parents' current lack of involvement within the sport organization itself, as well as sport organizations' limited reach and contact with parent groups.

To build the capacities of the coach facilitators, 35.6% of stakeholders (*n* = 21) suggested that coaches should be trained through a hybrid of training mediums developed by experts (i.e., training videos, training manual, handouts and/or printable infographics). Evaluating the rankings of these various training mediums independently (see Table 4), training videos were given a higher ranking because of their consistency with the current national training methods, whereas the training manual and informational handouts could act to reinforce the educational videos. However, 25.4% of stakeholder representatives (*n* = 15) indicated that training manuals should be avoided as the active user might lose interest and not give the information the appropriate attention. In addition, 62.7% of stakeholders (*n* = 37) felt the coach training should be a mandated, and standardized asynchronous e-learning certification professionally endorsed from organizations such as the Coaching Association of Canada (e.g., NCCP, Safe Sport Training, Locker, Professional Development [PD]) are needed for a topic like body image. Stakeholders suggested that the requirement to complete coaching training could earn PD points within their NCCP coaching pathways or otherwise be provided with a certificate of completion for their coaching transcript.

3.5.3. Intervention topics and content

The full ranks of potential content and topics, stratified by aesthetic and non-aesthetic sport stakeholders, are presented in Table 4. As reported by the stakeholder representatives, higher ranked topics were considered to be of greater importance to their organization or the least understood and discussed within their sport, whereas lower ranked topics were said to be frequently addressed in their current training methods. Overall, there was agreement (*n* = 21; 35.6%) that 'physical activity enjoyment and life balance' should be a central tenet of the program (i.e., ranked first). Stratifying the results by type of sport (Table 4), aesthetic sport representatives gave the topics 'healthy norms and sport/societal body-pressures' and 'eating disorder knowledge' a greater level of importance as compared with non-aesthetic sport representatives. In contrast, representatives of non-aesthetic sports gave the topics of 'mindfulness and mental training' and 'nutrition knowledge' greater levels of importance as compared with the aesthetic sports.

3.5.4. Dissemination and implementation

Some stakeholder representatives (*n* = 19; 32.2%) commented on the program approach, and 73.7% of these stakeholders agreed that the proposed program would obtain the most support by following a top-down approach (described as achieving support through the national sport bodies, followed into the provincial sport sections where they might promote it to the clubs and grassroots-level of their sport organization). Conversely, 21.1% felt that the provincial sport bodies have the greater power to mandate and deliver a program to the club and grassroot facilitators. Indeed, it was thought that once momentum is gained at the lower levels that it could push change at the highest level of the sport organizations (e.g., bottom-up approach).

3.5.5. Perceived barriers and factors influencing implementation

In the themes observed around perceived barriers that might hinder organizational implementation (see Table 5), buy-in from all organizational levels and denial of an issue in their sport appeared to be a main barrier among 30.5% of the stakeholder representatives (*n* = 18). A secondary theme related to perceived barriers of implementation which involved the limited capacity of the sport organizations and their coaches (i.e., time, staffing, currently required coaching training), as stated by 15.3% of the stakeholder representatives (*n* = 9). Other barriers related to the avoidance of the topics and normalizing the conversations in their sport (*n* = 7; 11.9%); the gender-specific nature of the proposed curriculum in co-gender sports (*n* = 5; 8.5%); and the current sport culture (*n* = 5; 8.5%).

Three themes were identified regarding the factors and trends that might influence the implementation of the body image program and resources (see Table 5). First, stakeholders (*n* = 15; 25.4%) emphasized the impact of the COVID-19 pandemic on their sport and needing to adapt to the environmental changes. Some stakeholders expressed that their current priorities are to return to sport, and therefore immediate attention might not be given to resources that address body image in sport. The 'new' online learning environment created by the COVID-19 pandemic must also be considered for successful dissemination and implementation of the program and resources. Additionally, stakeholders (*n* = 14; 23.7%) identified similarities between the proposed topics and current national Safe Sport programming. Given the large spotlight that has been placed on Safe Sport training for coaches, stakeholder representatives indicated that buy-in might be achieved if the proposed program were cushioned within national Safe Sport programming. Lastly, stakeholder representatives (*n* = 7; 11.9%) highlighted other movements for social justice within their sport organization and expressed the limited capacity for their organization to take on another initiative. Others felt that the heightened public attention placed on these social justice issues could help to catapult the topics of body image and disordered eating within adolescent girls' sport into the limelight.

4. Discussion

Taken together, this scoping review provides a current overview of the nature of existing body image and disordered eating prevention interventions for adolescent girls in both recreational and competitive

Table 3
Ranking of research questions by sport stakeholder representatives.

Research question	Rank			
	N	Mean (SD)	Median (range)	Overall rank order
In your sport organization, what has been used or what might be ideal as a lesson plan template?				
Multiple sessions	49	1.82 (.88)	2.00 (1–3)	1
One-off materials (no lesson)	36	1.75 (.73)	2.00 (1–3)	2
Single session	41	2.02 (.76)	2.00 (1–3)	3
What facilitation methods have you used in your sport organization, or what might be ideal for the proposed program?				
Activities and exercises	44	1.59 (.76)	1.00 (1–3)	1
Educational videos	45	1.87 (.84)	2.00 (1–3)	2
Handouts and discussions	45	2.47 (.63)	3.00 (1–3)	3
In your sport organization, who has facilitated your athletic programs or who might be the ideal facilitator of the proposed program?				
Coach-facilitated	45	1.20 (.46)	1.00 (1–3)	1
Peer-facilitated	45	1.82 (.53)	3.00 (2–3)	2
Parents-facilitated	4	1.25 (.50)	1.00 (1–2)	3
What method of facilitator training might be preferred in your sport organization?				
Training videos	44	1.27 (.59)	1.00 (1–3)	1
Training manual	27	2.07 (.78)	2.00 (1–3)	2
Handouts or printable infographics	32	2.28 (.73)	2.00 (1–3)	3

sport and is the first to integrate stakeholder feedback. Findings from the present study will inform future partner-driven projects aimed at developing evidence-based body image programs for adolescent girls in Canadian sport.

4.1. Main intervention outcomes

All interventions in this review were delivered face-to-face in the format of group sessions, with most conducted in North America. Over half of the studies ($n = 9$) reported significant effects and demonstrated enhancements in body image indicators (Hirsch et al., 2021), reductions in disordered eating patterns (Elliot et al., 2004, 2006; Martinsen et al., 2014; Piran, 1999; Ranby et al., 2009), lower intentions of using restrictive dietary behaviours (Laramée et al., 2017), and significant improvements in disordered eating knowledge (Brown et al., 2016; Laramée et al., 2017). Among the successful interventions that reported on the size of effect, two studies found a small to moderate effect following the interventions at 9-months (Ranby et al., 2009) and 1-year (Martinsen et al., 2014). The successes of these interventions were typically characterized by higher participation retention rates and often targeted multiple concepts including self-esteem, body image, prevention of disordered eating, and nutrition. However, these interventions were variable in the frequency and duration of the intervention sessions, as well as the overall length of the intervention. The interventions also utilized a wide range of techniques for the delivery of the sessions including lectures, workshops, and workbooks, with some incorporating supplementary materials such as homework assignments, social media, and videos. This review of interventions might have found modest and worthwhile effects, but there appears to be no clear pattern of results favouring any one particular method. Indeed, the multifaceted nature of these interventions makes it difficult to analyze and identify effective individual techniques and technique combinations (Michie et al., 2009; Sandgren et al., 2020). Certainly, if effective interventions are to be delivered to influence outcomes at both the individual and organizational level, greater clarity is needed about the functional components of those interventions.

Of note, however, the two interventions that reported unfavourable results and observed an increase in disordered eating among intervention participants were with ballet dancers (Doyle-Lucas & Davy, 2011; Kaufman et al., 1996). While the program content of one intervention included discussions of caloric content (Doyle-Lucas & Davy, 2011) and the other discussed "healthy ways to lose weight" such as aerobic exercise and moderate eating (Kaufman et al., 1996), the focus of diet and weight in the ballet environment, where extreme thinness is normalized and emphasized, might have ultimately increased the dancers' awareness of their own nutrition and eating behaviours. Further, the utility of healthy weight discourses in eating disorder prevention programs has been criticized (Tylka et al., 2014), and proposed as a stand-alone

contributor to body image concerns and eating disorder risk (Rodgers, 2016).

4.2. Intervention design and considerations

Descriptions of the interventions provided in this report indicated a central aim of educating or increasing eating disorder knowledge, preventing disordered eating behaviours, or enhancing body image indices in adolescent athletes. However, determining specific change techniques that are associated with improving body image proved difficult, given most interventions for body image disturbances were embedded in disorder eating prevention programs. The reported findings of these programs tended to focus on disordered eating psychopathology, and authors provided limited evaluations of body image-specific indicators (e.g., thin ideal internalization, body dissatisfaction). Given the associations between negative body image, disordered eating behaviours, and low sport participation among adolescent girls (Kong & Harris, 2015; Sabiston et al., 2019; Slater & Tiggemann, 2010), stand-alone body image interventions are needed for adolescent girls in the sport environment. Additionally, recognizing that body image is comprised of both negative and positive facets (Cash & Smolak, 2011), athlete-specific body image interventions should also consider targeting positive indicators of body image such as body appreciation, functionality appreciation, embodiment, and body image flexibility. In the present review, only Hirsch et al. (2021) reported on positive indicators of body image using the Embodied Image Scale (Abbott & Barber, 2010), though this instrument may not align with contemporary conceptualizations of positive body image (Webb et al., 2015). Program planners should consider incorporating a taxonomy of change techniques that are associated with changes in body image (i.e., reductions in negative body image, improvements in positive body image) in the general population (Alleva et al., 2015), such as discussing the role of cognitions in body image (Alleva et al., 2016; Jakatdar et al., 2006), addressing harmful fat talk and changing negative body language (Arroyo & Harwood, 2012; Cash, 2011; Jones, 2011), guided imagery (Jarry & Cash, 2011), and size-estimate exercises (Jarry & Cash, 2011).

Given the difficulty in identifying the functional components of these evidence-based practices, program planners might further consider practice-based evidence and circumstances in which the results of the research are expected to be applied (Green & Glasgow, 2006). Program components must be aligned with levels of policy, regulatory, or organization change needed from sport organizations and communities (Koulanova et al., 2021). This ecological alignment will support putting an evidence-based program into the broader practice-based context in which the real change must occur. Aligning at the institutional or organization level of adoption, sport system stakeholders matched the program and resources to its current population and sport setting. Sport stakeholders favoured the delivery of a multidimensional,

Table 4
Ranking of research topics by all sport stakeholder representatives, stratified by aesthetic and non-aesthetic sports.

Research question	Total			Aesthetic sport			Non-aesthetic sport		
	N	Mean (SD)	Overall rank order	N	Mean (SD)	Overall rank order	N	Mean (SD)	Overall rank order
What curriculum topics would you want to include in your ideal body image and disordered eating prevention program?									
Physical activity enjoyment and life balance	56	3.77 (2.68)	1	15	3.60 (2.20)	1	25	3.96 (2.94)	1
Self-esteem	58	2.88 (1.90)	2	16	3.31 (1.89)	1	26	2.69 (1.85)	2
Healthy norms and sport/societal body-pressures	57	4.05 (2.48)	3	15	3.80 (2.96)	1	26	4.62 (2.43)	5
Mindfulness and mental training	56	4.21 (1.96)	4	15	4.07 (1.91)	5	25	4.36 (1–8)	3
Nutrition knowledge	58	4.67 (1.69)	5	16	5.06 (1.95)	6	26	4.38 (1.63)	4
Eating disorder knowledge	58	4.64 (2.12)	6	16	3.81 (2.23)	4	26	5.08 (1.88)	6
Motivation and goal setting	56	5.71 (1.89)	7	15	6.00 (1.65)	7	25	5.56 (2.16)	7
Sport science	57	6.02 (2.06)	8	15	6.27 (2.05)	8	26	5.31 (2.17)	8

Note. Curriculum topics were ranked from 1 (*most important*) to 8 (*least important*). Aesthetic sport stakeholder representatives included gymnastics, dance, synchroswimming, diving, skating, and cheerleading. Non-aesthetic sport stakeholders included basketball, volleyball, karate, soccer, swimming, athletics (track and field), ringette, skiing, soccer, field hockey, softball, speed skating, and hockey.

Table 5

Main themes, subthemes, example quotes of implementing a body image program for adolescent girls involved in sport.

Themes and Subthemes	N	Exemplary quotes
Perceived barriers to program implementation		
Denial of issue in their sport	4	'And they're like, "my sport's a safe sport. We don't have that stuff in my sport, like that's a figure-skating thing, that's a gymnastics thing," and I tried to reiterate to these coaches and these trainers and these athletic directors that it's everywhere.' (non-aesthetic NSO representative)
		'The barrier is that there's not everyone that accepts that promoting positive body image is the responsibility of somebody other than an athlete's parent. I think that's something that we have to overcome.' (non-aesthetic PSO representative)
Buy-in from all levels	14	'From a national office, and then the provincial bodies, it's understanding the value and the benefit, and the value add. And I think that that would be something that would be really important – is ensuring that all levels of the system understand that value.' (non-aesthetic NSO representative)
		'I think I could see a barrier being that because we fall through a sanctioned NSO and then PSO, it would have to be passed by one of them before I could ever implement it into the clubs. So I could foresee that being a barrier because that will take forever essentially because nothing's ever quick when you have to pass it through a board.' (aesthetic sport club representative)
		'Definitely buy-in. Acceptance that there is a problem, right? I think a lot of people would just dismiss, "Ah, it's not a problem on our team. Our team has got a great culture". But they don't realize it's everywhere. So, I think that would be the probably number one.' (non-profit representative)
Capacity of the organization	9	'The biggest issue is going to be capacity of staffing. Like, coaches already do a ton of certification and it's this huge weight.' (non-aesthetic PSO representative)
		'And in terms of barriers, I think just time. Time in the gym, to go through these things and like, implement it.' (aesthetic sport club representative)
		'A big barrier is just the sheer amount of information and requirements that we're placing on clubs who just haven't got the capacity. Like, most of them, are run by volunteers.' (non-aesthetic PSO representative)
		'How can we not put more work, more time onto coaches? … So, any way that it can be integrated into something they're already doing would be really beneficial.' (non-aesthetic NSO representative)
Normalizing the conversation	7	'Big barrier I see is push back – it could be from the athlete themselves or the parents. The fact that it's a subject that people aren't comfortable talking about. Certainly, people are becoming more comfortable talking about mental illness and anxiety, and I think this is something that has been a little bit taboo and people aren't wanting to talk about as much and might make them uncomfortable, so that might be a barrier.' (non-aesthetic PSO representative)
		'I think both a barrier and one of the factors that can really affect the implementation of this program is really just normalizing the conversations and whole idea around body image. Because I think at this point, it's pretty taboo still to talk about, about body image.' (non-profit representative)
		'I think in terms of barriers, it's still my main concern as to why we even shy away from having these conversations. How do we have these conversations with the girls?' (non-profit representative)
		'Potential push back and hopefully not would include people saying, "you're just going to give them ideas by talking about this."' (non-aesthetic PSO representative)
Gender-specific resource	5	'I think the thing that could pose a challenge is the gendered nature of it, because at that grade level there's rarely gender segregated settings.' (education representative)
		'I think from my perspective in looking to deliver a new program, the first thing would be that it would have to be inclusive for boys and girls. So, we run all of our programs to make sure we're inclusive and we're running enough programs for girls, but I also don't think you can look at it the other way and say it's only fair we do something like this for girls and not for boys.' (non-aesthetic PSO representative)
		'This is something where if you're dealing with a sport that has mixed-gender training together, having something like this where it's just female-focused initially, any sort of group activity is exclusive.' (non-aesthetic sport club representative)
Current sport culture	5	'It's a sport that still has got a lot of old-school, like, 'let's-go-back-to-the-1960s-in-terms-of-training-methods' type personalities. And first, it would be coaches learning that this is a problem! So, there's still … even identifying a problem is a big problem in this sport, especially because it's not figure skating or cheerleading or gymnastics where it's necessarily a direct aesthetic judgement. It's related to performance as well. But people, like I've heard some coaches say some awful, negative comments about bodies. So that would be the very first thing – is making, making it more common knowledge that that's a problem.' (non-aesthetic NSO representative)
		'Our sports are judged. When you go to the Olympics, you don't see any girls that don't look like a certain shape, right? … We can do all this healthy body image and you, know, tell them that, "you look strong" and then they go watch these girls compete at the Olympics who look like they haven't eaten for weeks, or, you know what I mean? So, I know that's not very healthy, but I just don't know as a coach how to get over that, right? You know, we can send a message, but then they see this other message, and they conflict.' (aesthetic sport club representative)
		'What needs to change within the organization? A lot of things have to change, but the coaches valuing their athletes as individuals not as just paychecks … that is going to have to adjust big time in my sport and that's probably not going to happen for the next couple years here.' (non-aesthetic sport club representative)
		'Although I'm lucky my PSO is pretty good, I do notice within the sport itself that there is a lot of old-style coaches who believe in the old method. Like, very sharp. If you're not doing something right, you've got to do that way better. Or, you know, they are very old-style … A lot of people are set in their ways and they're not open to new things.' (non-aesthetic PSO representative)
Factors and trends influencing implementation		
COVID	15	'COVID does put a wrench in it. And I think right now everyone's worried about getting back on the field.' (non-aesthetic PSO representative)
		'Frankly, I think that if you ignore things like COVID-19, it will come out tone-deaf. And so, taking that into consideration in the materials … electronic and virtual is the way to go now, and supporting coaches to also adapt to virtual implementation. That's kind of a new reality that we are faced with COVID-19.' (non-profit representative)
		'If you look at it from a COVID lens, we will have less time because there are no dressing rooms for us right now. There are no spectators, so no parents there right now at all. And we're literally nowhere near them [athletes], except for on the ice.' (non-aesthetic sport club representative)
		'Things we just need to keep in mind — and timing or release will matter here— but just like our current COVID context and the degree to which it's impacted things like intramurals and sports and other activities. Like I think we've got even bigger concerns about lack of a physical activity for all right now.' (education representative)
Safe Sport	14	'And I feel like that could fit in the whole conception of Safe Sport very well. So, it's interesting that that's a big thing right now because this could be marketed the same way. And I feel like, in my sport anyways, it would be listened to more if it was marketed in that way.' (non-aesthetic NSO representative)
		'I feel something like this body image course is very much in alignment with Safe Sport. So, we would probably put it in around that.' (non-aesthetic PSO representative)
		'There's going to need to be some structure through Safe Sport and working in conjunction with Safe Sport so that the male coaches feel comfortable having these discussions with young females.' (non-aesthetic sport club representative)
		'The more resources and information that we're spewing at the coaches, the less they're taking in. So, how are we making this part of our overall goal which, I think the biggest goal in sport right now, is safe sport. The factors and trends are similar to the safe sport conversation – that's the trend right now. So, implementing it as part of it would be effective if you can do it the right way.' (non-aesthetic PSO representative)
		'We've seen a lot about safe sport recently, and a lot of funding going towards safe sport in general lately. And I think this topic can be part and parcel of safe sport. So, kind of leveraging that trend and those conversations about safe sport is a really good way to maybe start or maybe lay a foundation for some of these conversations as well.' (government representative)

Table 5 (*continued*)

Themes and Subthemes	N	Exemplary quotes
Social Justice	7	'The last two years in particular in the sport system has been extremely distracting in terms of the number of big topics that have come at sports, and it's very hard to get folk's attention to be honest, between you know, gender equity, safe sport, COVID, and now anti-racism work … So, I think the sort of capacity of sports to undertake another thing will be a factor and trend that you need to plan for.' (non-profit representative)
		'And I think the reason that these social justice issues are coming to fruition in sport is because it's caught people's attention. Like, this needs to be done.' (non-aesthetic NSO representative)
		'I feel like I haven't really followed the topic enough and I feel like it's something that is really very much needed, especially when we look at the gender equity movement that's happening right now within sport system and you know the encouragement for organizations to really get up to speed with that.' (non-profit representative)
		'The social justice and what's happening – the level of awareness is increasing and how that impacts girls' participation … this sits within an environment that is really changing and needs to be able to have very brave and courageous conversations, and this is one example. So, trying to weave in and not ignore that greater social context but wanting to create some sort of transformative change.' (non-profit representative)
High school curriculum	2	'There's obvious links. Like, huge links to the health program and the curriculum there. I'm thinking grade 10 Ontario health curriculum right now, but obviously there's really clear links for you there.' (non-profit representative)
Mental health status of coaches	2	'Just the anxiety and stress, I see that just everywhere – whether you go out to the grocery store or out to the mall, in a school talking – everybody is a lot more anxious and stressed. So, talking about something like this, I think that would be a big factor. I think it could influence implementation.' (non-aesthetic PSO representative)
		'Coaches – they have a lot of their plate. And so, it's a lot of time and energy.' (non-aesthetic PSO representative)

Note. PSO, provincial sport organization; NSO, national sport organization. Aesthetic sport stakeholder representatives included gymnastics, dance, synchro-swimming, diving, skating, and cheerleading. Non-aesthetic sport stakeholders included basketball, volleyball, karate, soccer, swimming, athletics (track and field), ringette, skiing, soccer, field hockey, softball, speed skating, and hockey.

multicomponent program, with a combination of evidence-based techniques rather than individual components of practices. Preferences for a blended delivery model were partly due to identified barriers of participant retention, the diverse sport training settings and requirements, and the multifaceted mechanisms by which interventions might cause true change at organization and individual levels. Collectively, these strategies, supported by evidence-based data and best practice research, align with recreation and competitive adolescent sport trends and best sport practices nationally and provincially. Future program planners should consider the interests and needs of their identified sport population, as well as sport trends and best practices, to support informed program decisions.

4.3. Practical considerations

It is evident that coaches report little confidence in initiating conversations or strategies to address body image concerns (Sabiston et al., 2020). Stakeholder reaction focus groups confirmed this hesitation and were careful and particular in the language that they used to broach the subjects. The implications of this, coupled with the limited knowledge and capacity for identifying and intervening on body image concerns, can lead to a lack of action that results in worsened symptoms (Nowicka et al., 2013). Further, organizations rely predominantly on volunteer coaches who have very little formalized training in the area of their sport and practices. A means to mitigate the effects of these realities is to integrate a train-the-trainers model where coaches are equipped with empirically based information and training to eventually deliver programming and strategies that mitigate body image concerns among adolescent girls in sport. The general opinions of stakeholders agreed that a train-the-trainers model may help in addressing barriers to scalability, large-scale implementation, and sustainability within their sport organizations (Becker & Stice, 2017). Formal coaching education on the implications of body commentary, eating and weight concerns has been evidenced to reduce athletes' perceived pressure from their sport club to lose weight (Buchholz et al., 2008) and buffer against the development of disordered eating (Martinsen et al., 2014). Equipping coaches with standardized coaching education and training delivered through existing national governing coaching programs and policies may support the implementation and dissemination of a body image program and resources. In particular, adding mandated body image units to structural programs such as the NCCP in Canada may garner the support of national sport bodies that is needed to ensure top-down ownership and accountability.

Similar to the educational training materials for coaches, stakeholder involvement confirmed a dire need for body image resources at multiple levels of sport organizations (e.g., athletes, parents, administrators, judges). Large-scale systemic primary prevention strategies are needed to raise awareness of the importance of body image in girls sport and to buffer body image concerns. Involvement of significant influencers in primary prevention efforts supports the work of Piran (1999), Martinsen et al. (2014), and Buchholz et al. (2008) that recommend both a participatory and ecological approach to prevention programming. Targeting change at multiple levels of the environment may facilitate and ensure change is maintained within the sport organization and environment.

4.4. Educational considerations

Interventions that promote balance between sport participation and life outside of sport, as well as physical activity for enjoyment, such as the BodySense program (Buchholz et al., 2008), were generally supported by sport system stakeholders. In this practice, coaches would encourage healthy and appropriate practices and training for athletes. Resources could include the promotion of activity and sport for fun; encourage athletes to view sports as a lifetime pursuit which includes caring for their bodies over time; encourage flexibility in scheduling workouts and training sessions; and encourage athletes to strive for balance between sport and other areas of their life (see, for example, Buchholz et al., 2008; Kaplan, 2014). Encouraging young athletes to develop good training habits may help athletes to develop an adaptive identity within sport.

Program planners may note the differences between aesthetic and non-aesthetic sports given that athletes participating in different types of sports carry different risks of developing an eating disorder (Bratland-Sanda & Sundgot-Borgen, 2013). Aesthetic sport representatives gave the topics 'healthy norms and sport/societal body-pressures' and 'eating disorder knowledge' a greater level of importance as compared with non-aesthetic sport representatives. Resources that approach these topics might address the unrealistic sport and cultural body ideals for girls and women; media and social pressures; explore eating attitudes and beliefs about food, exercise, weight and shape; examine the causes, signs, and symptoms of the Female Athlete Triad; define the various types of eating disorders, as well as signs and symptoms specific to an athletic setting; factors that protect or put athletes at risk for eating disorders; and the physiological impact of eating disorders on athletic performance (see, for example, Brown et al., 2016; Buchholz et al., 2008; Elliot et al., 2004; Hirsch et al., 2021; Kaplan, 2014; Kaufman et al., 1996; Laramée et al., 2017; Martinsen et al., 2014; Piran, 1999). In contrast, representatives of non-aesthetic sports gave the topics of 'mindfulness and mental training' and 'nutrition knowledge' greater

levels of importance as compared with the aesthetic sports. Resources that address 'mindfulness and mental training' might discuss healthy coping skills that can help manage stress (e.g., deep breathing techniques, progressive muscle relaxation); positive self-talk and other mindful practices; and promote self-compassion training and intervention (e.g., writing tasks; see, for example, Buchholz et al., 2008; Kaufman et al., 1996; Martinsen et al., 2014). With the topic of 'nutrition knowledge', resources could explain the role of carbohydrates, proteins, and fats; the liquid needs of young athletes and the importance of good hydration; growth and development, and the principles around energy metabolism; and model a positive approach to food (e.g., listening to your body, eating for enjoyment and satisfaction, resisting pressures to diet or change your natural body size; see, for example, Brown et al., 2016; Doyle-Lucas & Davy, 2011; Elliot et al., 2004; Kaufman et al., 1996; Laramée et al., 2017; Martinsen et al., 2014).

4.5. Limitations and future directions

Scoping reviews are an ideal tool to determine the scope or coverage of a body of literature on a given topic of research. However, this approach to evidence synthesis does not necessarily aim to critically appraise the results but rather provide a broad overview of the evidence. Due to this, an assessment of the methodological limitations or risk of bias of the evidence included were not performed. This may significantly limit the implications of this scoping review for practice, as well as guidance for clinical or policy making. Further, the use of a pre-planning phase in the research process is an important practice for project management and may increase the credibility of the research results. The authors acknowledge that pre-registration is a powerful approach and would have strengthened the quality and transparency of the findings outlined in this scoping review.

Aligning with recent recommendations (Sabiston et al., 2022) this scoping review included stakeholders across all steps of the protocol. A key partnership with NEDIC was deemed critical to the identification of existing body image programs as well as in the focus group discussions. The additional stakeholders represented many sport organization roles and responsibilities within Canadian sport. As identified by Sabiston and colleagues (2022), involving stakeholders throughout the scoping review process strengthens the implications because the perspectives of the individuals who are directly connected to, and may benefit from, the findings are integrated throughout the research process. Based on the outcomes of the review, our emerging partnership with NEDIC is used to develop a formalized plan for future collaborative research to ensure sustainability. This novel partnership will guide the development of future guidelines and programming for prevention resources directed to adolescent girl athletes.

Findings from this partner-driven and stakeholder-informed project will support on-going efforts calling for multifaceted strategies that prioritize the management of body image concerns, fostering of adaptive body image in the sport environment, and broader eating disorder prevention (Bar et al., 2016; Joy et al., 2016; Koulanova et al., 2021; Petrie, 2020). Indeed, intervention is needed in girls' sport and the proposed program has the capacity to fulfil several knowledge gaps, given that coaches perceive a need for body image resources (Sabiston et al., 2020), the sport environment for adolescent girls is saturated with body talk (Lucibello et al., 2021), and body image transcends many layers of sport (Koulanova et al., 2021). Much of these identified strategies are further supported through position statements and executive summaries published by panels of experts in the area of sport medicine (Bonci et al., 2008; Carson & Bridges, 2001; Chang et al., 2020) calling for mandatory education for athletes, coaches, and staff in the area of eating disorders, providing prevention programs starting at the youngest age levels, and creating a sporting environment where the health of the athlete is paramount.

Advancing sport-specific body image promotion and eating disorder prevention strategies requires developing partnerships with an array of

sport stakeholders. Without the support of Canadian sport organizations and stakeholders, efforts to develop this program might be ignored, criticized, or even resisted. Yet, achieving "buy in" from sport personnel is challenging given that fostering stakeholder partnerships is time consuming and there is risk that organizational values and views might not reflect the researcher or partnership interest. For many sports, body weight and/or aesthetic appearance are still considered central to athletic success (Bevan et al., 2021; Krane & Kaus, 2014; Lunde & Gattario, 2017; Mosewich et al., 2009; Rudd & Carter, 2006). Overcoming systematic and organizational changes is slow and arduous and reflects omnipresent sociocultural attitudes and ideals about girls' bodies in the sport context.

Lastly, given the current climate of the COVID-19 pandemic, it is important to be mindful that the existing and included studies were conducted pre-pandemic. Online delivery may be needed to support intervention scalability while accounting for a changing sports landscape given the cascading impact of the pandemic. It is suggested that program planners follow in the restart of sport initiatives and priorities.

5. Conclusion

This scoping review provides valuable insights into the current status of body image and disordered eating prevention initiatives targeting adolescent girls in sport. Given the difficulty in disentangling the functional components of previous interventions and the practical considerations from sport stakeholder representatives, there is a need for more participatory action research in naturalistic sport settings. Developing equitable and successful relationships between academic and non-academic partners has proved vital to advance the exchange and dissemination of knowledge directly targeting body image in adolescent girls' sports. Evidence from this partnership will be leveraged in the development of an accessible, evidence-based and stakeholder-informed virtual resource for adolescent girls in Canadian sport (https://ath letesembodied.ca/). The proposed community-based sport resource will include strategies and practices that address body image among adolescent girl athletes, as well as resources that inform sport system stakeholders about the complex factors that influence girls' body image. This partnership-driven research satisfies a critical mandate and resource gap from NEDIC, as well as a priority research call by Sport Canada (2017) to identify and mitigate the psychosocial factors that have led to a gender disparity in sport participation.

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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.2022.102215.

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