Development and Psychometric Testing of the Coach Self-Efficacy Body Image Scale

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Abstract

Body image concerns is a commonly cited reason for sport drop out among young female athletes (Neumark-Sztainer et al., 2018; Slater & Tiggemann, 2011). Research has begun to explore the systemic issues that underpin abusive, disordered, and uninformed coaching. However, no measure exists to accurately assess interventions or predict coach body image supportive behaviors. Using self-efficacy theory as a conceptual framework, the Coach Self-Efficacy Body Image Scale (CSEBIS) was developed. Content validity was judged by a panel of experts (n = 3) and through interviews with coaches (n = 4) of across levels of experience. Following a pilot test, the CSEBIS was assessed with 708 coaches for reliability and validity, including internal consistency, comparison of contrasted groups, and correlations with measures of similar constructs. Following further testing, this instrument may be used to accurately assess the effectiveness of body image education and intervention efforts in the sport context.
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Development and Psychometric Testing of the Coach Self-Efficacy Body Image Scale

**Introduction**

Body image, or how one thinks, feels, and perceives their body (Cash & Smolak, 2011) can be positively or negatively affected by numerous psychosocial factors (Neumark-Sztainer et al., 2007; Stice & Whitenton, 2002). Most concerning, poor body image is associated with increased risk of developing anxiety, depression, eating disorders, and risk-taking behaviors (Beccia et al., 2019; Goldschmidt et al., 2015; Ivezaj et al., 2010; Richard et al., 2016; Walker et al., 2018). Each of these consequences presents unique issues that can be detrimental to an individual’s physical and psychological health. Body image concerns are especially common among female athletes (Neumark-Sztainer et al., 2018; Slater & Tiggemann, 2011), often due to harmful behaviors from coaches (Coppola et al., 2013; Muscat & Long, 2008; Willson & Kerr, 2021).

Some interventions targeting athlete body image through the context of sport and exercise exist (Buchholz et al., 2008; Pineau, 2014; Sands & Wettenhall, 2000; Voelker et al., 2019). To determine the effectiveness of these interventions, body image-based measures such as the Body-Esteem Scale (Mendelson et al., 2001) and the Body Appreciation Scale-2 (Tylka & Wood-Barcalow, 2015) have been distributed among the athletes they target. However, currently no measure exists which examines coach beliefs or behaviors related to body image. Coaches have wide-reaching impact not only with one athlete but potentially a large number of athletes over a coaching trajectory and due to rosters of athletes changing year-to-year. To accurately assess if future interventions
have a lasting effect on body image, researchers need to measure coach beliefs and behaviors. No such tool currently exists.

The purpose of this study is to develop and validate a self-efficacy scale measuring coach beliefs in their ability to intervene and communicate issues related to body image. Creating and validating this scale will provide an evidence-based, rigorously tested framework to predict and assess outcomes related to body image in the sport context. The aim of filling this gap in the literature is to improve body image and decrease the likelihood of negative outcomes among athletes.

**Literature Review**

Body image is holistic, individualized, and flexible, incorporating both positive and negative constructs (Cash & Smolak, 2011; Tylka & Wood-Barcalow, 2015). Positive and negative body image are related yet independent constructs. Negative body image is often described as feeling dissatisfied, shameful, or preoccupied with one’s body (Tylka, 2015). Previous intervention research took a risk-reduction approach, attempting to prevent or improve negative body image such as those conducted by Gehrman and colleagues (2006) and Zabinski and colleagues (2001). When interventions fail to include positive body image, improvements may only result as neutral body image (Tylka & Wood-Barcalow, 2015). More recently, research has shifted from focusing on decreasing negative body image to increasing positive body image.

In contrast, positive body image is defined differently depending on researcher perspective and context of examination but will broadly be defined here as acceptance and appreciation of one’s body appearance and function (Tylka & Wood-Barcalow, 2015). Research shows that positive body image is associated with lower levels of
depression, higher self-esteem, and fewer unhealthy dieting behaviors (Gillen, 2015). Unfortunately, positive body image often declines throughout early adolescence (Wang et al., 2019), and most significantly among girls (Sabiston, Pila, et al., 2020). Thus, adolescence is a critical period that demands intervention to prevent the decline of positive body image.

**Body Image in Sport**

The declining levels of positive body image among girls is impacted by the unique pressures they face in society to adhere to unrealistic appearance ideals, objectification, body surveillance, and normalized disordered eating behaviors (Slater & Tiggemann, 2011; Vani et al., 2021; Voelker et al., 2021). While it is well documented that sport can help girls accrue health, psychosocial, and developmental assets (LaVoi et al., 2018) body image related pressures are exacerbated by performance demands and winning, and are made worse, reinforced, or ignored by coaches (Coppola et al., 2013; Muscat & Long, 2008; Willson & Kerr, 2021).

The majority of literature on body image in sport is focused on girls and women, with limited knowledge or exploration of boys’ and men’s body image, especially positive body image. What is known about male athletes, is that body image dissatisfaction is prevalent and documented (Goltz et al., 2013; O’Dea & Rawstorne, 2001) often due to pressures to adhere to body appearance ideals (large, muscular, low body fat percentage) as well as believing that being “lean” may lead to improved performance (Sundgot-Borgen & Tortveit, 2010; Milligan & Pritchard, 2006). Understanding how each of these factors influence body image is vital to determine when and how and when coaches can intervene.
**Appearance Ideals**

In the United States, both men and women are constantly pressured with unrealistic appearance ideals. Over the years, the pressure and prevalence of body dissatisfaction has only intensified due to the emergence of social media (Salomon & Brown, 2019). Individuals will go to great lengths in attempts to achieve this ideal, such as restrictive eating, excessive exercise, or purging (Keery et al., 2004) often ending in decreased body image and well-being (Jarman et al., 2021). Unique to female athletes, the pressure to fit the societal thin-ideal is compounded with the pressure to fit the athlete-ideal (Vani et al., 2021). Although the female athlete ideal is still thin, they are also expected to be extremely muscular but avoid becoming “manly” (Martin & Martin, 1995).

The athlete-ideal comes with a special condition: once you are out of the sport setting, whether through retirement or social settings, the ideal of society is once again expected (Greenleaf, 2002; Papathomas et al., 2018). Female athletes specifically are left with conflicting appearance expectations, such as feeling pressure to be muscular and strong in sport, but small and thin outside of sport. These expectations are not only internalized by the athletes but explicitly enforced by coaches (McMahon & Barker-Ruchti, 2015). Even in a sports environment where it would be assumed bodies of different appearance and ability are celebrated, girls must first fit a certain mold. It is not surprising then, that a survey of female athletes found the higher athletes rated their appearance-ideal conflict the lower their ratings were of quality of life (Daltry, 2013).

Most interventions aimed at improving body image teach protective strategies such as media literacy (Gordon et al., 2020). Additionally, a recent systematic review of
multimodal interventions targeting body image and movement found very few robust studies with short-term effects (Matheson et al., in progress A). Although teaching protective skills has been shown to be helpful in the short-term, there is limited evidence of this having a lasting effect in the long-term. Thus, educating coaches on how to challenge these appearance ideals is needed for future intervention development.

**Objectification and Surveillance**

Body surveillance and objectification of athletes is commonplace and normalized in sport, observed by stereotyped uniforms, unnecessary or public weigh-ins, and sexualized media coverage. For both male and female athletes, constant body surveillance and objectification may cause athletes to enjoy sport less, drop out of sport completely, or experience higher rates of body dissatisfaction (Grieve & Adrienne, 2008; Hallsworth et al., 2010; Linder & Daniels, 2018; Slater & Tiggemann, 2011; Vani et al., 2021). This preoccupation on appearance is what Fredrickson and Roberts (1997) coined as self-objectification.

According to Self-Objectification Theory (Fredrickson & Roberts, 1997), objectification of girls and women is so normalized in society that it becomes internalized as their own self-objectified view of themselves. Self-objectification has been linked with increased body surveillance; increased risk for anxiety, depression, and disordered eating; and diminished body image (Fredrickson & Roberts, 1997; Fredrickson et al., 1998; Harrison & Fredrickson, 2003; Jongenelis & Pettigrew, 2020). Some body image interventions have addressed the issue of self-objectification through education and training on media literacy (Choma et al., 2007), positive embodiment (Alleva et al., 2020; Menzel & Levine, 2011), and cognitive-behavioral strategies (Alleva et al., 2015;
Buchholz et al., 2008; Sands & Wettenhall, 2000) in an exercise or sport context. Cognitive-behavioral strategies may include learning how to challenge or reframe negative thoughts about one’s body, self-compassion, or relaxation. These strategies are extremely important for girls both in and out of sport but do not address the environmental and contextual issues that precede and reinforce self-objectification. Training coaches on how to advocate for athletes against objectifying policies (e.g., required uniforms) and challenge body surveillance is needed.

**Disordered Behaviors**

Being seen as objects who do not fit the unrealistic appearance ideals within society has led to body image concerns and disordered eating behaviors among athletes (Tylka & Augustus-Horvath, 2011). Examples of disordered behaviors include restrictive eating, compensatory exercise, and binge eating. The rate of disordered eating in sport is frightening as eating disorders have the highest mortality rate of any mental illness due to medical complications or suicide (American Psychiatric Association, 2013; Udo et al., 2019). Disordered eating behaviors have been observed among both male and female athletes of various sports and activities (DeFeciani, 2015; Goltz et al., 2013; Gorrell et al., 2021; McDonald et al., 2020)

Past research focused heavily on aesthetic-focused sports such as gymnastics, dance, figure skating, and wrestling (Krentz & Warschburger, 2011; Satterfield & Stutts, 2021; Van Durme et al., 2012) although recently, disordered behaviors in non-aesthetic-focused sports (i.e., basketball, soccer, volleyball) have also been recorded at disturbingly high numbers (Gorrell et al., 2021; McDonald et al., 2020). This pattern suggests that although some sports may have more risk factors than others, sport as a whole is the
common denominator. Athletes commonly cite the introduction or reinforcement of disordered habits from their coaches through behaviors such as commenting on athlete bodies, prescribing diets and inaccurate nutrition counseling, and measuring athlete bodies (Odea & Rawstorne, 2001; Voelker et al., 2021). Thus, it is important to target coach beliefs and behaviors in the prevention of eating disorders and body image concerns among their athletes, as well as teaching coaches to refer athletes to proper professionals for nutrition guidance.

**Coach Influence**

Coaches are influential role models for athletes. One coach influence hundreds of athletes during their tenure. Addressing body image on an individual level is important, however targeting and assessing coaches provides the opportunity to shift an entire team culture or sport program for many athletes to come. A coach’s knowledge and perceptions can all have positive or negative influence on athletes’ perceptions of themselves, enjoyment of sport, mental health, and physical health (Horn, 2002; Voelker et al., 2021)

Unfortunately, coaches often believe and promote harmful appearance ideals (Muscat & Long, 2008; Willson & Kerr, 2021). These beliefs and behaviors may lead to harmful, lasting effects on their athletes. For example, Vani and colleagues (2021) conducted semi-structured interviews with adolescent female athletes to explore the impact of negative body image behaviors on sport enjoyment and participation. The girls within the study referenced negative coach behaviors such as making derogatory comments about athlete bodies and mandating excessive exercise for girls who were
perceived as overweight. Many of the girls interviewed who had quit sport cited coach behaviors as a major factor in their decision.

**Body Positive Sport Environment**

Understanding the system and common causes of body image concerns within sport is the first step; determining what a positive body image sport environment looks like and how it needs to be changed is the next challenge. Currently, the common and harmful body image sport environment involves coaches comparing and openly criticizing athletes’ bodies while ignoring or forgetting to discuss body functionalities and normative body changes (Coppola et al., 2013; Vani et al., 2021; Willson & Kerr, 2021). Some coaches report being aware that body image issues within sport are prevalent, but don’t know how or don’t feel confident to address these issues (Sabiston, Lucibello, et al., 2020). By not addressing the issue at all, coaches may still cause harm by inadvertently reinforcing negative body behaviors and ideal. To create a body image supportive sport environment, coaches need to first be confident in their ability to talk about and address body image (Sabiston et al., 2020). To do this, however, coaches need accessible training and education on the topic. This need and want has been explicitly documented by coaches and researchers (Haslam et al., 2021; Matheson et al., in progress A; Schneider et al., in progress; Sabiston et al., 2020).

**Assessing Body Image Interventions**

To determine the effectiveness of interventions, researchers utilize body image self-assessments of the athletes they target (Buchholz et al., 2008; Voelker et al., 2019). Although this strategy is useful for interventions aimed at and involving athletes directly, they are less efficient for coach education interventions. To utilize body image
assessments from athletes, researchers would need to first assess the body image of the athletes prior to the intervention, and then assess them again following a predetermined length of time. This strategy poses limitations as it may be costly to measure body image for a sample of athletes of one coach, takes much longer to collect, and may be misleading to actual, long-term behavior changes of the coach themselves. Thus, there is a need for a valid and reliable measure to aid the creation and dissemination of research-based coach education around body image. Measuring self-efficacy may provide an effective, efficient, and economical option.

**Self-Efficacy**

Self-efficacy is the degree of confidence that one is capable of achieving a goal or completing a task and predicts future performance of a task (Bandura, 1977). Multiple constructs influence the strength and certainty of one’s self-efficacy: past accomplishments, vicarious experiences, imaginal experiences, social persuasion, physiological states, and emotional states (Bandura, 1977; Maddux, 1995). Each of these constructs relate to self-efficacy differently, such as being successful in the past may be more influential in improving self-efficacy than imaging yourself being successful (Bandura, 1986).

**Coach Self-Efficacy**

Applying Self-Efficacy Theory to coach interventions around body image in sport is important as expectation of achievement may be a more influential predictor of behavior than previous accomplishment alone (Bandura, 1986). For example, if a coach believes they are able to intervene when an athlete is talking negatively about their body, that coach is likely to intervene when the moment arises, even if they’ve never done it
before. In contrast, a coach who does not believe that they are capable are less likely to intervene.

In 2012, Sullivan and colleagues (2012) examined the relationship between coach self-efficacy, perceived behaviors, competition level, and coach education among youth coaches in Canada. The researchers found that coach self-efficacy predicted perceived behaviors regardless of competition level. Thus, coaches who were more self-efficacious were more likely to self-report engaging in behaviors such as positive feedback, social support, and instruction whether they were coaching at a recreation level or competitive level (Sullivan et al., 2012). Sullivan and colleagues (2012) also found that coaching education significantly influenced coach self-efficacy. This novel study highlights two important considerations: 1) coaches who are confident in their ability to perform a task are likely to report actually performing these tasks and 2) coach education may be an important tool for upskilling coaches and improving self-efficacy.

In 2004, Vaughan and colleagues assessed athletic trainers’ self-efficacy assisting female athletes with eating disorders. Almost all the athletic trainers reported having previous experience, but only about one third reported feeling confident in their ability to ask an athlete or even identify an athlete with an eating disorder. The findings by Vaughan and colleagues (2004) highlight the importance of extending research to survey self-efficacy among coaches, as a coach experienced in dealing with athletes who have body image issues or who has participated in an intervention may still not be confident in their ability. Lack of confidence may get in the way of athletes receiving the help they need, or they may receive hesitant, unsupportive help.
Finally, coach self-efficacy may be able to predict athlete perceptions of coach behaviors. Specifically, Kavussanu and colleagues (2008) utilized the Coach Efficacy Scale (Feltz et al., 1999) to survey coaches and their athletes in England on coach self-efficacy, and athlete perceived coaching effectiveness. Majority of coaches rated their self-efficacy equal or lower than their athletes on three of four subscales (motivation, game strategy, character building). More recently, Caron and colleagues (2018) conducted a similar study and found that coaches rated themselves higher more often than their athletes. However, general coaching techniques are different than body image support and it is unknown whether body image related self-efficacy would result in similar findings of higher ratings than athletes. To determine this distinction, a scale is needed to examine this relationship and determine if measuring the self-efficacy of one coach or a coaching staff may be a useful alternative to studying a whole team of athletes’ perception of coaches. If so, this process may be more feasible and effective, which would save researchers and intervention developers time and money.

**Significance of Study**

Intervention developers in the field of body image and sport are starting to target the link between coach influence, team culture, and individual athlete body image. To determine the effectiveness of interventions, researchers need to examine coach behaviors and beliefs around body image in sport. Currently, a sport specific body image scale for coaches does not exist. The purpose of this study is to develop and validate a self-efficacy scale measuring coach beliefs in their ability to intervene and communicate issues related to body image. The proposed measure will provide a tool to assess and predict coach behaviors and beliefs; thus, coach education and body image interventions
can accurately be evaluated. By ensuring coaches have improved self-efficacy on the topic of body image, athletes will be more likely to experience an environment that facilitates positive body image; ultimately, keeping more people in sport, enjoying sport, and decreasing the risk of experiencing physiological and psychological consequences.

Methods

Procedures

A mixed method, multi-phased study design was utilized to develop and evaluate the Coach Self-Efficacy Body Image Scale (CSEBIS). In phase 1, qualitative data were analyzed in the developmental phase of the CSEBIS via focus groups, expert feedback, and cognitive interviews. In phase 2, quantitative data were analyzed in the testing phase of the CSEBIS via an online survey. All procedures were approved by the institution’s ethics committee where the study was conducted (IRB approval STUDY00013842). See Figure 1 for list of procedures and participants recruitment and attrition.

Phase 1: Development of Scale

A literature review was conducted to identify present measures focused on body image, self-efficacy, and coaching. No measure measures related to body image in sport or image and coaches were found. Scale items were created based on the research literature, related scales, and previous qualitative research with coaches around the topic of body image (Matheson et al., in progress B; Schneider et al., in progress). After a review of resources, the first draft of the scale was 57 items long with six expected domains, or subscales, on a five-point Likert-scale ranging from 1 (“strongly disagree”) to 5 (“strongly agree”).
Figure 1

*Study Procedures, Recruitment, and Attrition*

**Phase 1: Development of Scale**

- Literature Review
  Identification of Existing Scales
- Focus groups with coaches and athletes on perspectives of body image in sport
  (Matheson et al., in progress)
- IRB application and approval
- Scale item creation & Review within research team
- Expert Panel Review & Feedback ($N = 3$)
- Cognitive Interviews ($N = 4$)

**Phase 2: Testing the Scale**

- Recruitment via social media, emails, and word of mouth
- Testing at Time 1 ($n = 1,167$)
- Removed for Incomplete data or failed attention check ($n = 459$)
- Testing at Time 2 ($n = 498$)
  - Did not complete Time 2 ($n = 210$)
  - Removed for incomplete data or failed attention check ($n = 53$)
  - Unable to match responses ($n = 52$)

**Data Analysis**

- Sample 1 ($n = 354$)
  - Exploratory Factor Analysis, Correlation Analysis, Cronbach’s Alpha
- Sample 2 ($n = 328$)
  - Confirmatory Factor Analysis, Convergent Validity, Discriminant
    Validity, Correlation Analysis, Cronbach’s Alpha
- Sample 3 ($n = 393$)
  - Test-Retest Reliability

Scale Finalization
**Expert Panel**

Next, a multidisciplinary panel of experts were recruited to review the initial scale and provide feedback assessing content validity. Four scholars in the fields of body image, eating disorders, athletics, coaching, and scale development (all women) were identified and recruited via email to provide feedback on the first draft of the CSEBIS. Three experts provided feedback in time for this study. Based on expert reviews, items few items were modified, and 14 items were removed. The panel also suggested condensing the expected domains, recognizing many of the themes were repetitive. The feedback from the panel resulted in a second version of the CSEBIS which consisted of 43 items and 2 expected domains. One expert suggested mixing in a different answer type (simple scale of zero to ten) to assess level of confidence instead of Likert-scale.

**Cognitive Interviews**

Cognitive interviewing is a process aimed at that evaluating and improving self-report survey questions (Gordon, 2015). The cognitive model of the survey response process (CMSRP) was used a framework for developing the probing questions (Tourangeau, 1984) as it is recommended for scale items that may be unfamiliar to the target population (Gordon, 2015). For example, questions were developed to ask participants to explain their thought process answering a question, and to define certain terms within a question.

A small sample of the target population (coaches, $n = 4$) were recruited to take the scale on their own and then participate in semi-structured interviews. Participants were recruited until the researchers evaluated the data to be fully saturated. Recruitment of coaches for content validity assessment was conducted via convenience sampling and
yielded four participants. Recruitment was then halted due to saturation of data and feedback (Gordon, 2015). The sample included one male coach (age = 25 years), three female coaches ($M_{age} = 27$ years, $SD = 1.2$), and all coaches identified as White/Caucasian. The sports represented in this sample were cross country, basketball, tennis, and wrestling. All participants reported coaching adolescents (younger than 18 years old) of various ages at the high school level. One participant reported also coaching adults (over 18 years of age). One participant coached only male athletes, one participant coached only female athletes, and two participants coached male and female athletes. Coach tenure ranged from one year to over ten years ($M = 4.7$ years, $SD = 3.5$). Only one of the coaches reported having received training or education around the topic of body image previously.

Questions under the CMSRP focus on identifying comprehension, retrieval of relevant information, judgment of the process, and the response process (Gordon, 2015; Tourangeau, 1984). Examples of probing questions include: “why did you answer the question with ‘somewhat agree’?” and “how would you describe body image in your own words?” A full list of interview questions and probes can be found in Appendix A. Retrospective probing was chosen as it has been recommended for self-administered measures (Gordon, 2015). Participants completed the scale a head of the interview and recalled their thought process. Following the completion of all the cognitive interviews, the scale was revised based on the qualitative data collected. No scale items were removed, but some were reworded, and the scale type was changed from a Likert-type to a 0-10 sliding scale.
Finally, the participants took the scale once more and provided written feedback to determine if there were any lingering questions, confusion, or issues with the scale items or process. The cognitive interview data lead to modification of items but no item removal. The participants also reported struggling with the Likert-scale format and preferred the few questions that included the added scale of one to ten. The final scale before initial testing was consisted of 43 items, 2 expected domains, and all items were answered on a scale of zero (no confidence in ability) to ten (complete confidence in ability).

**Phase 2: Testing the CSEBIS**

Psychometric testing of the CSEBIS was completed in two stages. Stage one included: exploratory factor analysis (EFA), confirmatory factor analysis (CFA), convergent validity, discriminant validity, and correlation analysis. Stage two examined test/retest reliability. Email addresses were collected to match responses across time. Providing email addresses was not required to complete part one. Data was downloaded directly from Qualtrics and placed in an SPSS file. The principal investigator (PI) removed all email addresses from the data before making it available to the research team.

Recruitment for psychometric testing consisted of social media posts; emails to athletic directors and conference commissioners requesting assistance in recruitment; emails directly to known and identified coaches; and advertisements for the study in university and industry partner newsletters. Coaches were offered an entrance into a random drawing for multiple different prizes ($150, $100, $75) with the completion of the survey. Winners of the random drawing were chosen and notified after two weeks.
after the study was completed. Participants who did not win were also notified.

**Measures**

The Coach Self-Efficacy Body Image Scale (CSEBIS) was developed for the purpose of this study. The CSEBIS prompted respondents to finish the leading phrase: “I am confident in my ability to…” with the 43 items around knowledge/recognition and intervention behaviors such as “describe what body image is” and “refrain from talking about my body in front of my athletes.” Participants were then instructed to indicate their confidence on a scale of zero to ten with zero indicating no confidence and ten indicating complete confidence. The full CSEBIS can be found in Appendix B.

The Coaching Efficacy Scale (CES) examines individual confidence in sport coaching ability (Feltz et al., 1999). The CES has four subscales: motivation, game strategy, technique, and character building. For the purpose of this study, only the motivation, technique, and character-building subscales were used. Respondents were prompted to finish the leading phrase: “I am confident in my ability to…” with items such as “motivate my athletes” and “build team confidence.” Participants were then instructed to indicate their confidence on a scale of zero to nine with zero indicating “not at all confident” and ten indicating “extremely confident.” The CES (Feltz et al., 1999) can be found in Appendix C.

The Body Esteem Scale for Adolescents and Adults (BESAA) examines individual’s self-evaluations of their body or appearance (Mendelson et al., 2001). The BESAA has 23 items across three subscales: appearance, weight, and attributions of one’s body. Respondents were prompted to indicate how often they agree with statements such as “I am proud of my body” and “There are lots of things I’d change about my looks
if I could.” Participants were then instructed to indicate how often they agree with the statements on a Likert-scale of zero (“never”) to four (“always”). The BESAA (Mendelson et al., 2001) can be found in Appendix D.

**Results**

Participant recruitment yielded 1,167 responses. Responses were removed for analysis due to not continuing past the consent ($n = 239$); completing consent but not continuing ($n = 8$); not continuing after the inclusion criteria screening question ($n = 157$); failing the screening question ($n = 31$); not answering the screening question ($n = 1$); failing or not answering the first attention check ($n = 23$). Total participants included in analysis was $N = 708$. The total participant pool was divided into three different samples for analyses.

**Sample 1**

Sample 1 ($N = 354$) was half of the total sample based on survey completion date. Initially, analyses were performed to check for normality (skewness and kurtosis $\geq \pm 2.58$). All questionnaires (i.e., CSEBIS, CES, BESAA) showed normal distributions. Majority of the participants identified as a woman ($n = 250$, 72.5%), White ($n = 299$, 86.7%), head coach ($n = 185$, 53.6%), coach of adolescent ($n = 193$, 56.1%) female athletes ($n = 188$, 54.5%) at the high school level ($n = 133$, 38.6%), and had previous education or training on the topic of body image ($n = 177$, 51.3%). Participants ranged in age (18-76, $M = 35.6$, $SD = 12.4$) and years of coaching experience (0-50, $M = 11.8$, $SD = 9.57$). Thirty-five sports/activities were represented. See Appendix E for a full list of demographics.
Exploratory factor analyses (EFAs) were conducted to explore the multi-dimensional nature of the CSEBIS. EFA was performed using a principal component analysis and varimax rotation. The minimum factor loading criteria was set to 0.50. The communality of the scale, which indicates the amount of variance in each dimension, was also assessed to ensure acceptable levels of explanation. The results show that all communalities were above 0.50 and there was no cross-loading of items.

The size of the Kaiser-Meyer-Olkin measure of sampling adequacy (KMO = .95) revealed that the CSEBIS items had adequate common variance for factor analysis, and the significance of Bartlett’s test of sphericity, $x^2(n = 903) = 9779.24$ ($p < .001$), indicated that the correlation matrix was factorable (Tabachnick & Fidell, 2007). Finally, the factor solution derived from this analysis yielded 8 factors for the scale, which accounted for 67.04% of the variation in the data. However, seven items failed to load on any dimension significantly and were removed from further analysis:

- **Item 8** ...describe harmful stereotypes associated with boys’ and men’s bodies in sport.
- **Item 24** ...emphasize body functionality (how the body works and what it can do) over body appearance (how the body looks) when talking with my athletes.
- **Item 25** ...provide support if an athlete is being critical about their body.
- **Item 27** ...redirect conversations when I hear other coaches talk about athletes’ appearance.
- **Item 28** ...redirect conversations when I hear parents talk about an athlete’s appearance.
• Item 39 ...help make my athletes feel comfortable in their bodies while practicing and competing

• Item 41 ...focus on my athletes’ performance and well-being, rather than what their body looks like

The EFA was repeated after excluding these items. The results of this new analysis showed a 7-factor dimensional structure. The Kaiser-Meyer-Olkin MSA was .94. The seven dimensions explained a total of 68.50% of the variance among the items in the study. The Bartlett’s Test of Sphericity proved to be significant, $\chi^2(n = 630) = 8336.26 \, (p < .001)$ and all communalities were over the required value of 0.5.

Reliability analyses were conducted to assess Cronbach’s alpha as well as correlations between factors (Table 1). The original reliability analyses showed lower Cronbach’s alpha values (alpha < .70) for factor 6 (3 items) and factor 7 (3 items). Additionally, correlations showed that factor 5 (3 items) did not correlate well with the remaining four factors (r < .30). Factor five also showed lower Cronbach’s alpha below the preferred threshold of > .80 for the psychometric quality of scales (Boateng et al., 2018). As such, an additional nine items were removed from further analyses:

• Item 32 ...model positive body behaviors while I’m coaching

• Item 33 ...challenge feminine stereotypes on my team and with my athletes

• Item 34 ...challenge masculine stereotypes on my team and with my athletes

• Item 35 ...adjust my practice plan if my athletes are telling me they are thirsty or tired

• Item 36 ...adjust my practice plan if an athlete tells me they are on their period/menstruating
• Item 37 ...advocate for my athletes against objectifying policies, such as uncomfortable or sexualized uniforms
• Item 38 ...advocate for my athletes against stereotypical policies, such as body weight limits or stereotypical uniforms (e.g., skirts only vs shorts only)
• Item 40 ...allow my athletes to choose their uniform size and style, when possible
• Item 42 ...refrain from weighing my athletes

The EFA was repeated after excluding these items. The results of this new analysis confirmed a 4-factor dimensional structure. The Kaiser-Meyer-Olkin MSA was .96. The four dimensions explained a total of 69.42% of the variance among the items in the study. The Bartlett’s Test of Sphericity proved to be significant, $\chi^2(n = 351) = 7260.19 \ (p < .001)$ and all communalities were over the required value of 0.5.

All items correlated significantly with the CSEBIS mean ($r = .27 - .77, p < .01$); correlations were weak to moderate for factor 4 ($r = .27 - .47, p < .01$), with all other items showing strong correlations ($r > .63, p < .01$). View Table 1 for full list of inter-item and item-total correlations. Themes of the subscales were examined and named the following: knowledge, recognition, support, and prevention.

Sample 2

Sample 2 was the second half of the total sample based on survey completion date. Participants with missing values ($n = 26$) on the CSEBIS were excluded so that modification and fit indices could be attained ($N = 328$). Initially, analyses were performed to check for normality (skewness and kurtosis $\geq \pm 2.58$). All questionnaires (i.e., CSEBIS, CES, BESAA) showed normal distributions. Majority of the participants
Table 1

*Cronbach’s Alphas, Eigenvalues, and Correlations of Items and Factors*

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*Note.* All correlations = $p < .01$. K = Knowledge subscale of the CSEBIS. R = Recognition subscale of the CSEBIS. S = Support subscale of the CSEBIS. P = Prevention subscale of the CSEBIS. T = Total CSEBIS scale.
identified as a woman \((n = 163, 51.1\%)\), White \((n = 292, 91.5\%)\), head coach \((n = 252, 79.0\%)\), coach of adults \((n = 151, 47.3\%)\) female athletes \((n = 158, 49.5\%)\) at the college level \((n = 160, 50.2\%)\), and had previous education or training on the topic of body image \((n = 187, 58.6\%)\). Participants ranged in age \((18-82, M = 44.1, SD = 12.29)\) and years coaching \((1-52, M = 19.29, SD = 12.29)\). Twenty-nine sports/activities were represented. See Appendix E for a full list of demographics.

The goal of Sample 2 was used to replicate and validate the factor structure of the CSEBIS by conducting a confirmatory factor analysis (CFA) on a new set of data. The first model validated was a first-order model with the four factors. A second-order model was validated to assess whether all of the CSEBIS items can be captured by a single score. Path diagrams for the first-order model are provided on Figure 2 and were generated using IBM Amos software. The following model fit statistic cut-offs were considered indicative of a good fitting model: \(\chi^2/df\) Good \(\leq 2\), Acceptable \(\leq 3\); TLI > 0, < 1; CFI Good \(\geq .95\), Acceptable \(\geq .90\); RMSEA Good \(\leq .06\), Acceptable \(\leq .08\); SRMR Good \(\leq .08\), Acceptable \(\leq .10\) (Hooper et al., 2008; Byrne, 2013).

The first order model (four separate subscales) demonstrated good fit \([\chi^2(307) = 568.101, p < 0.001; \chi^2/df = 1.85; TLI = 0.96; CFI = 0.96; RMSEA = 0.05, p = 0.39; SRMR = 0.055]\). The second-order model (one total scale) demonstrated similarly good fit \([\chi^2(309) = 596.79, p < 0.001; \chi^2/df = 1.93; TLI = 0.95; CFI = 0.96; RMSEA = 0.05, p = 0.19; SRMR = 0.07]\). Both models showed good model fit and can thus be used in future studies as either a full scale or individual subscales.
Figure 2

First-Order Model with Four Subscales and Factor Loadings for Coach Self-Efficacy

Body Image Scale
Validity

The convergent validity of the CSEBIS was assessed by examining the relationship between CSEBIS scores and measures of motivational, technique, character, and general coach self-efficacy. Means, standard deviations, alphas are included in Table 2. Correlations of .50 and above were considered large, correlations lower than .30 were considered small (Cohen, 1960, 1988). Higher CSEBIS scores were strongly associated with higher general coach self-efficacy \( (r = .51, p < .001) \). Higher CSEBIS scores were also moderately associated with motivational \( (r = .50, p < .001) \), technique \( (r = .36, p < .001) \), and character coach efficacy \( (r = .33, p < .001) \). All individual factors of the CSBEIS were weakly or moderately associated with the various factors of the CES. See Table 3 for a full list of correlations.

The discriminant validity of the CSEBIS was assessed by examining the relationship between CSEBIS scores and measures of individual body image. Only the prevention CSEBIS factor was weakly associated with the appearance body image factor \( (r = .13, p < .05) \) suggesting that feeling confident in one’s ability to engage in body image prevention behaviors is associated with feeling positively about physical appearance. All other factors of CSEBIS and BESAA were not correlated. See Table 3 for a full list of correlations.
Table 2

*Means, Standard Deviations, and Alphas of all Measures*

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*Note.* CSEBIS = Coach Self-Efficacy Body Image Scale, CES = Coaching Efficacy Scale, BESAA = Body Esteem Scale for Adolescents and Adults.
Table 3

Correlations Between the CSEBIS, CES, and BESAA

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Note: CSEBIS = Coach Self-Efficacy Body Image Scale. K = Knowledge subscale of the CSEBIS. R = Recognition subscale of the CSEBIS. S = Support subscale of the CSEBIS. P = Prevention subscale of the CSEBIS. CES = Coach Efficacy Scale. M = Motivation subscale of the CES. T = Technique subscale of the CES. C = Character subscale of the CES. BESAA = Body Esteem Scale for Adolescents and Adults. AP = Appearance subscale of the BESAA. AT = Attributions subscale of the BESAA. W = Weight subscale of the BESAA.

** p < 0.001
Differentiation by Known Groups

**Previous Training.** Independent $t$-tests were utilized to assess for differences between coaches who had previous training on the topics of body image and/or eating disorders, or no previous training. Coaches who were not sure or didn’t remember were excluded from analysis. Results showed that participants with previous training scored significantly higher on the CSEBIS ($M = 7.96, SD = 1.10$) than participants with no previous training ($M = 7.22, SD = 1.45$), $t(170.05) = 3.29, p = 0.001$, suggesting that those with training will have higher self-efficacy than those without.

**Coach Gender.** Independent $t$-tests were utilized to assess for differences between female coaches and male coaches. One non-binary coach was excluded from analysis due to low sample size. Results showed that women scored significantly higher on the CSEBIS ($M = 7.90, SD = 1.14$) than men ($M = 7.61, SD = 1.34$), $t(317) = -2.05, p = 0.04$, suggesting that female coaches have higher body image self-efficacy than male coaches.

**Sport Type.** Sports represented were coded into either aesthetic focused (e.g., beach volleyball, cheer, wrestling, etc.) or non-aesthetic focused sports (e.g., basketball, soccer, softball, baseball, etc.) based on examples from previous literature (Gorrell et al., 2021; Krentz & Warschburger, 2011; McDonald et al., 2020; Satterfield & Stutts, 2021; Van Durme et al., 2012). Independent $t$-tests were utilized to assess for differences between coaches of aesthetic focused sports and non-aesthetic focused sports. Results showed that that coaches of aesthetic-focused sports scored significantly higher on the CSEBIS ($M = 8.00, SD = 1.23$) than coaches of non-aesthetic-focused sports ($M = 7.63,$
SD = 1.23), \( t(326) = 2.55, p = 0.01 \), suggesting that coaches of aesthetic focused have higher body image self-efficacy than coaches of non-aesthetic focused sports.

**Coach Tenure.** Simple linear regressions were calculated to predict CSEBIS scores based on coach tenure in their current position and total coach tenure. Significant results were not found for either tenure of current position \( [F(1, 316) = .001, p = .97, R^2 = -.003] \) or total coach tenure \( [F(1, 316) = .04, p = .84, R^2 = -.003] \). This suggests that overall experience is not advantageous to gaining more body image self-efficacy for coaches.

**Team Gender.** A one-way analysis of variance (ANOVA) was used to assess differences between coaches who coach female athletes only, male athletes only, or all athletes. The ANOVA showed no significant difference on the CSEBIS between groups \( [F(2) = 0.93, p = 0.39] \) suggesting that coaching specific genders of athletes is not related to body image self-efficacy.

**Team Age.** An ANOVA was used to assess differences between coaches of adolescent athletes, adult athletes, or both. The ANOVA yielded a main effect for team age, \( F(2) = 4.89, p = 0.01 \), such that participants who coached adolescents \( (M = 8.02, SD = 1.16) \) scored higher on the CSEBIS than those who coached adults \( (M = 7.54, SD = 1.30; p < 0.01) \). No significant differences were found for participants who coached both adults and adolescents \( (M = 7.77, SD = 1.20; p > 0.05) \).

**Sample 3**

Sample 3 were participants from the total sample who completed the first survey (test) and second survey (retest) minimum of 1 week later. Over half of the total sample participated in the retest measure \( (N = 498) \). Some participants did not complete the
survey or had missing data \((n = 35)\), failed the attention check \((n = 18)\), or did not enter their identifiable information to match their responses \((n = 52)\) and were excluded from analysis. Majority of the participants identified as a woman \((n = 238, 60.6\%)\), White \((n = 359, 91.3\%)\), head coach \((n = 268, 68.2\%)\), coach of adolescents \((n = 187, 47.7\%)\) female athletes \((n = 200, 50.9\%)\) at the college level \((n = 151, 38.4\%)\), and had previous education or training on the topic of body image \((n = 219, 55.7\%)\). Participants ranged in age \((18-82, M = 39.63, SD = 12.75)\), years coaching \((0-45, M = 15.5, SD = 10.6)\). Thirty-three sports/activities were represented. See Appendix E for a full list of demographics.

*Cronbach’s Alpha*

Reliability analyses were conducted to assess Cronbach’s alpha as well as correlations between factors at Time 2. The reliability analyses showed high Cronbach’s alpha values \((\alpha > .85)\) for all factors and total CSEBIS scale at Time 2.

*Test-Retest Reliability*

Pearson’s correlations were conducted between factor scores from time 1 and time 2 to assess for test-retest reliability. Time 1 and Time 2 factor scores and CSEBIS total scores show large, significant correlations \((r = .71-.83, p < .01)\), which indicate high reliability (see Table 4).
Table 4

Correlations Between Time 1 and Time 2

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Note: ** p < 0.01. K = Knowledge subscale of the CSEBIS. R = Recognition subscale of the CSEBIS. S = Support subscale of the CSEBIS. P = Prevention subscale of the CSEBIS.
Discussion

Although few measures exist to assess validity of the CSEBIS, the correlations between the CES (Feltz et al., 1999) and the BESAA (Mendelson et al., 2001) resulted in the expected direction. A higher score on the CSEBIS was related to higher scores of general coach self-efficacy. The relationship between body image self-efficacy and general coach self-efficacy suggests that coaches who are most confident in their coach ability are also more confident in their ability to recognize body image concerns and implement positive body image behaviors. Less self-efficacious coaches may require targeted interventions or more hands on, explicit role playing as these techniques to address various influences of self-efficacy (past accomplishments, modeling, etc.).

Only one CSEBIS subscale (prevention) was weakly correlated with the appearance subscale of the BESAA while the remaining subscales and total scales observed no relationship. This finding suggests that a coach’s individual body image is not related to the confidence in their ability to positively impact athlete body image. This is an encouraging finding, as it suggests it may be possible to break the cycle of harmful influences from coaches even if they don’t necessarily believe it themselves.

Observed differences between groups helped support the validity of the CSEBIS exhibiting expected outcomes. For example, female coaches, coaches of aesthetic-focused sports, and coaches of adolescents showed the highest body image self-efficacy compared to other groups. This is unsurprising as body image related interventions and education are usually targeted towards these groups (Alleva et al., 2015; Voelker et al., 2019). Targeted interventions aimed at male coaches, non-aesthetic focused sports, and coaches of adults may be warranted.
The CSEBIS showed good reliability and validity in the current sample and reflects positive body image constructs, beliefs, and supportive behaviors identified by athletes, coaches, and scholars in the field. The four subscales within the CSEBIS (knowledge, recognition, support, and prevention) exhibit good internal consistency. Validation of the CSEBIS and its subscales should continue to replicate these findings.

**Practical Implications and Future Directions**

The development and validation of the CSEBIS has multiple practical implications. First, the CSEBIS may be used to assess the efficacy of body image education content for coaches. By using the CSEBIS in congruence with qualitative feedback, intervention developers can create and modify their curriculum to achieve lasting and impactful change. Highlighting the use of the CSEBIS for validating content may also improve the reliability of the intervention for its intended users.

Second, sport organizations may use the CSEBIS as a tool to evaluate their own organizational culture and educational needs. If an organization as a whole or specific coaches scores low on the CSEBIS, immediate action such as mandatory education is suggested. Sport organizations may also use the assessment on an annual basis to observe and highlight trends in their coach self-efficacy across time. Organizations equipped with self-efficacious coaches may be more appealing to athletes and parents.

Lastly, the CSEBIS may act as an intervention by itself. Many coaches who participated in the current study provided positive feedback reporting feeling grateful for taking the survey and being exposed to this topic. Thus, sport organizations may use the CSEBIS as a tool to evaluate their organizational culture and educational needs, but also
to inspire important conversations on the topic of body image to decrease stigma and increase self-efficacy among coaches.

The CSEBIS is the first and only scale which examines self-efficacy around the topic of body image which can be used as single scale or as subscales for particular domains. However, the scale was validated for adult, English speaking coaches in the United States. Future research should use the CSEBIS as a template and modify the language to validate the scale and examine the self-efficacy among other significant populations (i.e., teachers and parents), settings (i.e., physical education classes), and participant demographics (i.e., outside of the United States).

Finally, the CSEBIS still requires more validity and reliability testing that were outside the scope of this study. Future research should examine the difference in average scores before and after interventions compared to control groups to further assess concurrent validity. Predictive validity should be assessed by comparing CSEBIS assessments and athlete reported body image assessments. Convergent validity may be assessed by examining the relationship between scores and coach observation or athlete report. Repeated tests of validity already conducted is also warranted due to the novel nature of this scale.

**Limitations**

This is the first study of the psychometric properties of the CSEBIS, and further studies of its reliability, validity, and factor structure is advisable. Specifically, further study of the CSEBIS should take place among coaches of color, male coaches, and coaches of male athletes as they were underrepresented in this study. The sample skewed
towards white women, which is not representative or generalizable as majority of coaching positions are held by men (e.g., NCAA Demographics Database, 2021).

It is also possible that coaches overestimate the belief that they are competent or capable of these behaviors, also known as the Dunning-Kruger Effect (Dunning, 2011). If present, this could pose potential problems, if coaches are scoring significantly higher than they are actually capable, it may harm or hinder the body image of their athletes and teams. To examine if this effect is present and skewing the results, coach behaviors would need to be observed or athletes would need to evaluate their coach’s knowledge, skills, and behaviors. Future studies should assess athlete perceptions of their coaches and coach behaviors to assess if the CSEBIS can accurately predict self-efficacy.

Finally, pre- and post-test was not assessed in this study, which would determine if the CSEBIS is sensitive enough to detect changes in self-efficacy after education or an intervention. Future research should assess coach body image self-efficacy before and after interventions to not only suggest the efficacy of the intervention but to determine the pre- and post-test validity of the CSEBIS.

**Conclusion**

The results support the initial validity and reliability of the CSEBIS among sport coaches in the US. The data suggests that female coaches of adolescent athletes in aesthetic focused sports have the highest body image self-efficacy. The data also suggests that male coaches, coaches of adults, and coaches of non-aesthetic focused sports have the highest need for education and intervention around the topic of body image. By utilizing the CSEBIS and ensuring coaches have improved self-efficacy on the topic of body image, athletes will be more likely to experience an environment that facilitates
positive body image; ultimately the goal is to retain sport participants, encourage the enjoyment of sport, and thereby decrease the risk of experiencing physiological and psychological consequences of participation in sport or interaction and communication with coaches.
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Appendix A

Cognitive Interview Questions

Scale Process:
- How long did it take you to complete this questionnaire?
- After reading the introduction/instructions were you surprised by the scale items?
- Did you prefer the sliding scale (0 – 10) or the Likert scale? Why?

Q1:
- Why did you answer ____?
- How would you describe body image?

Q2:
- Why did you answer ____?
- What are some of those consequences of feeling bad about your body in sport?

Q3 – Q5:
- Why did you answer ____?
- What are some of the positive outcomes?

Q6:
- Why did you answer ____?
- How does body image relate to sport?

Q7:
- Why did you answer ____?
- What would be an example of a harmful stereotype of female athletes?
Q8:
- Why did you answer ____?
- What would be an example of a harmful stereotype of male athletes?

Q9:
- Why did you answer ____?
- Why is body image important in sport?

Q10:
- Why did you answer ____?
- What would be one sign that one of your athletes may have poor body image?

Q11 – Q12:
- Why did you answer ____?
- Between Q11 and Q12 which makes the most sense to you or is more relevant?

Q13:
- Why did you answer ____?
- What would be an example of an athlete being critical of their body?

Q14 – Q15:
- Why did you answer ____?
- Is there a difference between being self-conscious and not feeling comfortable?
  - If yes: what is the difference?

Q1 – Q15:
Looking at the past 15 questions, are there any you think were confusing, hard to understand, or irrelevant?

Anything you would like to add about this section before we move on?

Q16 – Q20:
- Take a few minutes to review the next 5 questions
- In your opinion, are any of these behaviors not possible in a sport setting or in your program?
- Are any of these behaviors not relevant?
- Are any of these behaviors unfamiliar or confusing?

Q21 – Q25:
- Take a few minutes to review the next 5 questions
- In your opinion, are any of these behaviors not possible in a sport setting or in your program?
- Are any of these behaviors not relevant?
- Are any of these behaviors unfamiliar or confusing?

Q26 – Q30:
- Take a few minutes to review the next 5 questions
- In your opinion, are any of these behaviors not possible in a sport setting or in your program?
- Are any of these behaviors not relevant?
- Are any of these behaviors unfamiliar or confusing?

Q31 – Q35:
- Take a few minutes to review the next 5 questions
- In your opinion, are any of these behaviors not possible in a sport setting or in your program?
- Are any of these behaviors not relevant?
- Are any of these behaviors unfamiliar or confusing?

Q36 – Q40:
- Take a few minutes to review the next 5 questions
- In your opinion, are any of these behaviors not possible in a sport setting or in your program?
- Are any of these behaviors not relevant?
- Are any of these behaviors unfamiliar or confusing?

Q41 – Q43:
- Take a few minutes to review the next 3 questions
- In your opinion, are any of these behaviors not possible in a sport setting or in your program?
- Are any of these behaviors not relevant?
- Are any of these behaviors unfamiliar or confusing?

Scale Review
- What are your impressions of the scale as a whole?
- Do you think this scale measures what we are trying to measure (confidence in ability in sport context)?
- Overall, your score would hypothetically indicate you have ____ confidence in your ability to discuss and tackle these issues related to body image. Would you agree or disagree with that assessment? Why?
- Anything else you would like to add, comment on, or questions you may have?
Appendix B

Coach Self-Efficacy Body Image Scale (Silva-Breen et al., 2022)

This survey asks about your confidence in recognizing and dealing with body image concerns your athletes face. Body image refers to how we think, feel and behave in relation to our bodies (e.g., being happy about your hair, weight, height or appearance). Body image includes both the appearance and functionality of the body (e.g., how the body works and what it can do). We can have both positive (e.g., “my legs are strong”) and negative (e.g., “my legs are too big”) thoughts and feelings about our bodies.

Please think about your specific sport settings and the athletes you coach (rather than your family members or friends) when answering these questions. If you haven’t experienced the body image examples described, answer to the best of your ability how confident you think you would be in that situation.

Please indicate on a scale of 0 (no confidence) to 10 (completely confident) how confident you are in the following statements. Remember, there are no right or wrong answers, so please answer as honestly as possible.

<table>
<thead>
<tr>
<th>Sub Scale</th>
<th>Items</th>
<th>0 ------------------------------10</th>
</tr>
</thead>
<tbody>
<tr>
<td>K</td>
<td>1. ...describe what body image is</td>
<td>0 1 2 3 4 5 6 7 8 9 10</td>
</tr>
<tr>
<td>R</td>
<td>2. ...identify signs of poor body image among my athletes</td>
<td>0 1 2 3 4 5 6 7 8 9 10</td>
</tr>
<tr>
<td>S</td>
<td>3. ...ask an athlete if they have body image concerns</td>
<td>0 1 2 3 4 5 6 7 8 9 10</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>R</td>
<td>4.</td>
<td>...recognize when an athlete feels bad about their body</td>
</tr>
<tr>
<td>S</td>
<td>5.</td>
<td>...have a discussion with an individual athlete about their body image</td>
</tr>
<tr>
<td>K</td>
<td>6.</td>
<td>...describe why body image is important in sport</td>
</tr>
<tr>
<td>P</td>
<td>7.</td>
<td>...talk about athletes without mentioning their body weight or shape</td>
</tr>
<tr>
<td>P</td>
<td>8.</td>
<td>...prohibit critical comments or body shaming from others towards my athletes</td>
</tr>
<tr>
<td>R</td>
<td>9.</td>
<td>...recognize when an athlete is being critical of their body</td>
</tr>
<tr>
<td>K</td>
<td>10.</td>
<td>...identify the consequences feeling bad about your body can have in sport</td>
</tr>
<tr>
<td>P</td>
<td>11.</td>
<td>...refrain from talking about my body in front of my athletes</td>
</tr>
<tr>
<td>P</td>
<td>12.</td>
<td>...refrain from discussing body shape and weight with my athletes</td>
</tr>
<tr>
<td>S</td>
<td>13.</td>
<td>...talk with an athlete who has recently and suddenly started wearing very ill-fitting clothing (baggy or tight)</td>
</tr>
<tr>
<td>P</td>
<td>14.</td>
<td>...refrain from talking about others’ appearance in front of my athletes</td>
</tr>
<tr>
<td>K</td>
<td>15.</td>
<td>...identify the positive outcomes that having good body image can have on an athlete’s sport performance</td>
</tr>
<tr>
<td>S</td>
<td>16.</td>
<td>...talk with an athlete who has recently had a sudden and drastic change in weight (loss or gain)</td>
</tr>
<tr>
<td>K</td>
<td>17.</td>
<td>...identify the positive outcomes that having good body image can have on an athlete’s sport enjoyment</td>
</tr>
<tr>
<td>R</td>
<td>18.</td>
<td>...recognize when an athlete doesn’t like their body</td>
</tr>
<tr>
<td>S</td>
<td>19.</td>
<td>...normalize discussions around body image with my team</td>
</tr>
<tr>
<td>P</td>
<td>20.</td>
<td>...refrain from making comments about an athlete’s appearance - whether positive or negative</td>
</tr>
<tr>
<td></td>
<td>21. ...identify the positive outcomes that having good body image can have on an athlete’s overall well-being</td>
<td>0 1 2 3 4 5 6 7 8 9 10</td>
</tr>
<tr>
<td>---</td>
<td>----------------------------------------------------------------------------------------------------------</td>
<td>-------------------------</td>
</tr>
<tr>
<td>K</td>
<td>22. ...recognize when an athlete is not comfortable in their body</td>
<td>0 1 2 3 4 5 6 7 8 9 10</td>
</tr>
<tr>
<td>R</td>
<td>23. ...talk with my staff to help determine whether an athlete has body image concerns</td>
<td>0 1 2 3 4 5 6 7 8 9 10</td>
</tr>
<tr>
<td>S</td>
<td>24. ...describe how body image relates to sport</td>
<td>0 1 2 3 4 5 6 7 8 9 10</td>
</tr>
<tr>
<td>K</td>
<td>25. ...recognize when an athlete is self-conscious about their body</td>
<td>0 1 2 3 4 5 6 7 8 9 10</td>
</tr>
<tr>
<td>R</td>
<td>26. ...discuss body functions with my athletes (e.g., menstruation)</td>
<td>0 1 2 3 4 5 6 7 8 9 10</td>
</tr>
<tr>
<td>S</td>
<td>27. ...describe harmful stereotypes associated with girls’ and women’s bodies in sport</td>
<td>0 1 2 3 4 5 6 7 8 9 10</td>
</tr>
</tbody>
</table>

**Scoring:** Average all values for a total CSEBIS score and/or average by subscale (indicated below).

<table>
<thead>
<tr>
<th>Subscale:</th>
<th>Knowledge (K)</th>
<th>Recognition (R)</th>
<th>Support (S)</th>
<th>Prevention (P)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Item number</td>
<td>1, 6, 10, 15, 17, 21, 24, 27</td>
<td>2, 4, 9, 18, 22, 25</td>
<td>3, 5, 13, 16, 19, 23, 26</td>
<td>7, 8, 11, 12, 14, 20</td>
</tr>
</tbody>
</table>
Appendix C

Coaching Efficacy Scale (CES) adapted from Feltz et al., 1999

Coach confidence refers to the extent to which coaches believe that they have the capacity to affect the learning and performance of their athletes. Think about how confident you are as a coach. Rate your confident for each of the items below on a scale of “not at all confident” (0) to “extremely confident” (9).

I am confident in my ability to…

…help athletes maintain confidence in themselves
…mentally prepare my athletes for game strategies
…build the self-esteem of my athletes
…motivate my athletes
…build team cohesion
…build the self-confidence of my athletes
…build team confidence
…demonstrate the skills of my sport
…coach individual athletes on technique
…develop athletes’ abilities
…recognize talent in athletes
…detect skill errors
…teach the skills of my sport
…instill an attitude of good moral character
…instill an attitude of fair play among my athletes
...promote good sportsmanship

...instill an attitude of respect for others
Appendix D

The Body Esteem Scale for Adolescents and Adults (BESAA) adapted from

Mendelson et al., 2001

The following questions will ask about how you feel about *your own appearance or body overall*, not only in the context of sport.

Indicate how often you agree with the following statements ranging from "never" (0) to "always" (4).

1. I like what I look like in pictures
2. Other people consider me good looking
3. I’m proud of my body
4. I am preoccupied with trying to change my body*
5. I think my appearance would help me get a job
6. I like what I see when I look in the mirror
7. There are lots of things I’d change about my looks if I could*
8. I am satisfied with my weight
9. I wish I looked better*
10. I really like what I weight
11. I wish I looked like someone else*
12. People my own age like my looks
13. My looks upset me*
14. I’m as nice looking as most people
15. I’m pretty happy about the way I look
16. I feel I weigh the right amount for my height

17. I feel ashamed of how I look*

18. Weighing myself depresses me*

19. My weight makes me unhappy*

20. My looks help me to get dates

21. I worry about the way I look*

22. I think I have a good body

23. I’m looking as nice as I’d like to

Questions marked with * are reversed scored.
Appendix E

Demographics of Psychometric Testing Participants

<table>
<thead>
<tr>
<th></th>
<th>Sample 1 (n = 354)</th>
<th>Sample 2 (n = 328)</th>
<th>Sample 3 (n = 393)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M</td>
<td>SD</td>
<td>M</td>
</tr>
<tr>
<td>Age</td>
<td>35.64</td>
<td>9.57</td>
<td>44.05</td>
</tr>
<tr>
<td>Total Tenure</td>
<td>11.81</td>
<td>9.57</td>
<td>19.29</td>
</tr>
<tr>
<td>Position Tenure</td>
<td>5.98</td>
<td>6.58</td>
<td>10.74</td>
</tr>
<tr>
<td>Gender</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gender Fluid</td>
<td>1</td>
<td>0.3</td>
<td>0</td>
</tr>
<tr>
<td>Men</td>
<td>92</td>
<td>26.7</td>
<td>156</td>
</tr>
<tr>
<td>Non-Binary</td>
<td>2</td>
<td>0.6</td>
<td>0</td>
</tr>
<tr>
<td>Women</td>
<td>250</td>
<td>72.5</td>
<td>163</td>
</tr>
<tr>
<td>Ethnicity</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Asian/Pacific Islander</td>
<td>9</td>
<td>2.6</td>
<td>2</td>
</tr>
<tr>
<td>American Indian/Alaska Native</td>
<td>1</td>
<td>0.3</td>
<td>1</td>
</tr>
<tr>
<td>African American/Black</td>
<td>11</td>
<td>3.2</td>
<td>5</td>
</tr>
<tr>
<td>Caucasian/White</td>
<td>299</td>
<td>86.7</td>
<td>292</td>
</tr>
<tr>
<td>Hispanic/Latino</td>
<td>10</td>
<td>2.9</td>
<td>10</td>
</tr>
<tr>
<td>Mixed/Multiracial</td>
<td>15</td>
<td>4.3</td>
<td>9</td>
</tr>
<tr>
<td>Position</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Assistant Coach</td>
<td>104</td>
<td>30.1</td>
<td>37</td>
</tr>
<tr>
<td>Associate Head Coach</td>
<td>19</td>
<td>5.5</td>
<td>11</td>
</tr>
<tr>
<td>Head Coach</td>
<td>185</td>
<td>53.6</td>
<td>252</td>
</tr>
<tr>
<td>Other</td>
<td>104</td>
<td>30.1</td>
<td>10</td>
</tr>
<tr>
<td>Volunteer</td>
<td>18</td>
<td>5.2</td>
<td>9</td>
</tr>
<tr>
<td>Athlete Age</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Both Adolescents &amp; Adults</td>
<td>58</td>
<td>16.9</td>
<td>48</td>
</tr>
<tr>
<td>Adolescents Only</td>
<td>193</td>
<td>56.1</td>
<td>120</td>
</tr>
<tr>
<td>Athlete Gender</td>
<td>Adults Only</td>
<td></td>
<td></td>
</tr>
<tr>
<td>---------------------------</td>
<td>-------------</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Boys/Men Only</td>
<td>93</td>
<td>27.0</td>
<td>151</td>
</tr>
<tr>
<td>Coed</td>
<td>35</td>
<td>10.1</td>
<td>55</td>
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<tr>
<td>Girls/Women Only</td>
<td>122</td>
<td>35.4</td>
<td>106</td>
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<tr>
<td>Competition Level</td>
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</tr>
<tr>
<td>Club</td>
<td>47</td>
<td>13.6</td>
<td>21</td>
</tr>
<tr>
<td>College</td>
<td>98</td>
<td>28.4</td>
<td>160</td>
</tr>
<tr>
<td>High School</td>
<td>133</td>
<td>38.6</td>
<td>107</td>
</tr>
<tr>
<td>International</td>
<td>1</td>
<td>0.3</td>
<td>0</td>
</tr>
<tr>
<td>Junior/Community College</td>
<td>4</td>
<td>1.2</td>
<td>13</td>
</tr>
<tr>
<td>Middle School/Junior High</td>
<td>19</td>
<td>5.5</td>
<td>4</td>
</tr>
<tr>
<td>National/Olympic</td>
<td>2</td>
<td>0.6</td>
<td>0</td>
</tr>
<tr>
<td>Non-Competition</td>
<td>18</td>
<td>5.2</td>
<td>3</td>
</tr>
<tr>
<td>Other</td>
<td>11</td>
<td>3.2</td>
<td>4</td>
</tr>
<tr>
<td>Recreation/In-House</td>
<td>12</td>
<td>3.5</td>
<td>7</td>
</tr>
<tr>
<td>Previous Training</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>146</td>
<td>42.3</td>
<td>104</td>
</tr>
<tr>
<td>Not Sure</td>
<td>22</td>
<td>6.4</td>
<td>28</td>
</tr>
<tr>
<td>Yes</td>
<td>177</td>
<td>51.3</td>
<td>187</td>
</tr>
</tbody>
</table>

*Note.* Sample 1 = first half of survey participants; Sample 2 = second half of survey participants; Sample 3 = participants from sample 1 and 2 who also completed the retest 2 weeks later.
Coach Self-Efficacy Body Image Scale (Silva-Breen et al., 2022)

Instructions for Use

Using and Modifying the CSEBIS

- The CSEBIS may be used as a whole or by each individual subscale. Items cannot be mixed and matched across subscales. For example, the shortest version of this scale would be 6 items (via Recognition or Prevention subscales).
- When using the CSEBIS, the instructions to participants must be included and the scale range must be 0 to 10.
- If the questionnaire is split over multiple pages, each page should include the instructions and leading phrase.
- If the CSEBIS is modified in any way that has not been validated previously, that must be mentioned in methodology and considered as a limitation when interpreting data. For example, this version of the CSEBIS was validated only with adults and thus may not be appropriate for use with younger people.

Interpreting the CSEBIS

- Once the scale has been completed, average the items together as a scale total (27 items) or each subscale individually.
- Once the scores have been averaged together you should have a number ranging from 0-10 with 10 indicating high self-efficacy and 0 indicating low self-efficacy.
- Please remember in mind that having high self-efficacy does not always mean the coach will perform that action or perform it well. Providing follow up education or information is warranted whether a coach indicates low or high self-efficacy.
• The results of this questionnaire should not be used to make clinical diagnoses or inform medical treatment.

**Example for Use**

This survey asks about your confidence in recognizing and dealing with body image concerns your athletes face. Body image refers to how we think, feel and behave in relation to our bodies (e.g., being happy about your hair, weight, height or appearance). Body image includes both the appearance and functionality of the body (e.g., how the body works and what it can do). We can have both positive (e.g., “my legs are strong”) and negative (e.g., “my legs are too big”) thoughts and feelings about our bodies.

Please think about your specific sport settings and the athletes you coach (rather than your family members or friends) when answering these questions. If you haven’t experienced the body image examples described, answer to the best of your ability how confident you think you would be in that situation.

Please indicate on a scale of 0 (no confidence) to 10 (completely confident) how confident you are in the following statements. Remember, there are no right or wrong answers, so please answer as honestly as possible.

**I am confident in my ability to...**

1. ...describe what body image is
   0 1 2 3 4 5 6 7 8 9 10

2. ...identify signs of poor body image among my athletes
   0 1 2 3 4 5 6 7 8 9 10

3. ...ask an athlete if they have body image concerns
   0 1 2 3 4 5 6 7 8 9 10
4. ...recognize when an athlete feels bad about their body
5. ...have a discussion with an individual athlete about their body image
6. ...describe why body image is important in sport
7. ...talk about athletes without mentioning their body weight or shape
8. ...prohibit critical comments or body shaming from others towards my athletes
9. ...recognize when an athlete is being critical of their body
10. ...identify the consequences feeling bad about your body can have in sport
11. ...refrain from talking about my body in front of my athletes
12. ...refrain from discussing body shape and weight with my athletes
13. ...talk with an athlete who has recently and suddenly started wearing very ill-fitting clothing (baggy or tight)
14. ...refrain from talking about others’ appearance in front of my athletes
15. ...identify the positive outcomes that having good body image can have on an athlete’s sport performance
16. ...talk with an athlete who has recently had a sudden and drastic change in weight (loss or gain)
17. ...identify the positive outcomes that having good body image can have on an athlete’s sport enjoyment
18. ...recognize when an athlete doesn’t like their body
19. ...normalize discussions around body image with my team
20. ...refrain from making comments about an athlete’s appearance - whether positive or negative
21. ...identify the positive outcomes that having good body image can have on an athlete’s overall well-being
22. ...recognize when an athlete is not comfortable in their body
23. ...talk with my staff to help determine whether an athlete has body image concerns
24. ...describe how body image relates to sport
25. ...recognize when an athlete is self-conscious about their body
   0 1 2 3 4 5 6 7 8 9 10

26. ...discuss body functions with my athletes (e.g., menstruation)
   0 1 2 3 4 5 6 7 8 9 10

27. ...describe harmful stereotypes associated with girls’ and women’s bodies in sport
   0 1 2 3 4 5 6 7 8 9 10

<table>
<thead>
<tr>
<th>Subscale:</th>
<th>Knowledge</th>
<th>Recognition</th>
<th>Support</th>
<th>Prevention</th>
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<td>Item:</td>
<td>1, 6, 10, 15, 17, 21, 24, 27</td>
<td>2, 4, 9, 18, 22, 25</td>
<td>3, 5, 13, 16, 19, 23, 26</td>
<td>7, 8, 11, 12, 14, 20</td>
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