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Adolescents' body awareness mediates psychosocial health: A systematic review

By

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Abstract

Body awareness can influence psychosocial development. The psychosocial factors of adolescents are important aspects. However, there is no systematic review that discusses the role of body cognition on the psychosocial factors of adolescents. This systematic review is literature review pertaining to the potential impact of body awareness on healthy adolescents. Studies on the potential impact of body awareness published between 2010 and 2021 were extracted from the Web of Science, MEDLINE, PubMed, and Academic Search Ultimate databases. Five studies consistent with eligibility criteria based on inclusion and exclusion criteria were included in the final systematic review. There was one Level I (randomized controlled trial) design and four studies had a Level III (non-randomized one-group study) design. Meditation, yoga, mindfulness, mindfulness-based yoga, and Training for Awareness, Resilience, and Action (TARA) were applied as treatment methods related to body awareness. The measurement of psychosocial aspects was mainly applied in the studies related to body awareness targeting healthy adolescents. This study assessed evidence presented in studies related to body awareness in healthy adolescents.

Keywords: Body awareness, Healthy adolescents, Systematic review

1. Introduction

Body idea is a subjective judgment about the qualities or characteristics of one's own physical appearance and that of others. This subjective perception of the body is the most important factor in developing the body idea (Kugel, 1989). These perceptions of the body may differ from objective reality based on a person's experience or work, or from their background or the environment to which they belong. Body awareness is considered to be the basis of an individual's psychomotor structure and is the product of the interrelationship between neurological and behavioral aspects that integrate the bodily sensations present in the environment (Bertoldi et al., 2007).

Adolescence is a broad category that spans from 12 to 24 years of age. It is a period of rapid physical growth and change in which adolescents develop physical characteristics similar to those of adults, although there are individual differences (Block & Robins, 1993). Adolescence is a critical period of development during which adolescents have to navigate challenging social situations and establish their identity as they transition into emerging adulthood [4]. In addition, from a psychosocial perspective, it is the period when questions about the meaning of one's existence begin, the concept of the ideal is established, and the social desire to be accepted by the peer group through group norms also begins (Zarrett & Eccles, 2006).

According to the evidence presented above, body awareness can influence psychosocial development. The psychosocial factors of adolescents are important aspects. Especially, adolescence is also a period of great change in perceptions of the body. Based on the findings of previous studies, body awareness has the potential to affect adolescents' development either positively or negatively. However, although studies have reported that the element of body awareness is an important factor in human growth and development, there is a lack of research related to body awareness among adolescents. Specially, there is no systematic review that discusses the role of body awareness on the psychosocial factors of adolescents. In particular, an investigation and assessment of research related to body awareness among adolescents is needed to determine how it affects adolescents' psychosocial growth and development. Few studies have provided evidence from in-depth investigations into adolescent body awareness. Therefore, the purpose of this review was to investigate and assess evidence related to the impact of body awareness on the psychosocial development and growth of adolescents through a systematic literature review.

2. Materials and Methods

2.1 Study design

This systematic review is investigated on body awareness among healthy adolescents published between 2010 and 2021. It follows the guidelines in the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) Statement (Page et al., 2021). The PRISMA flow diagram is presented in Fig. 1.

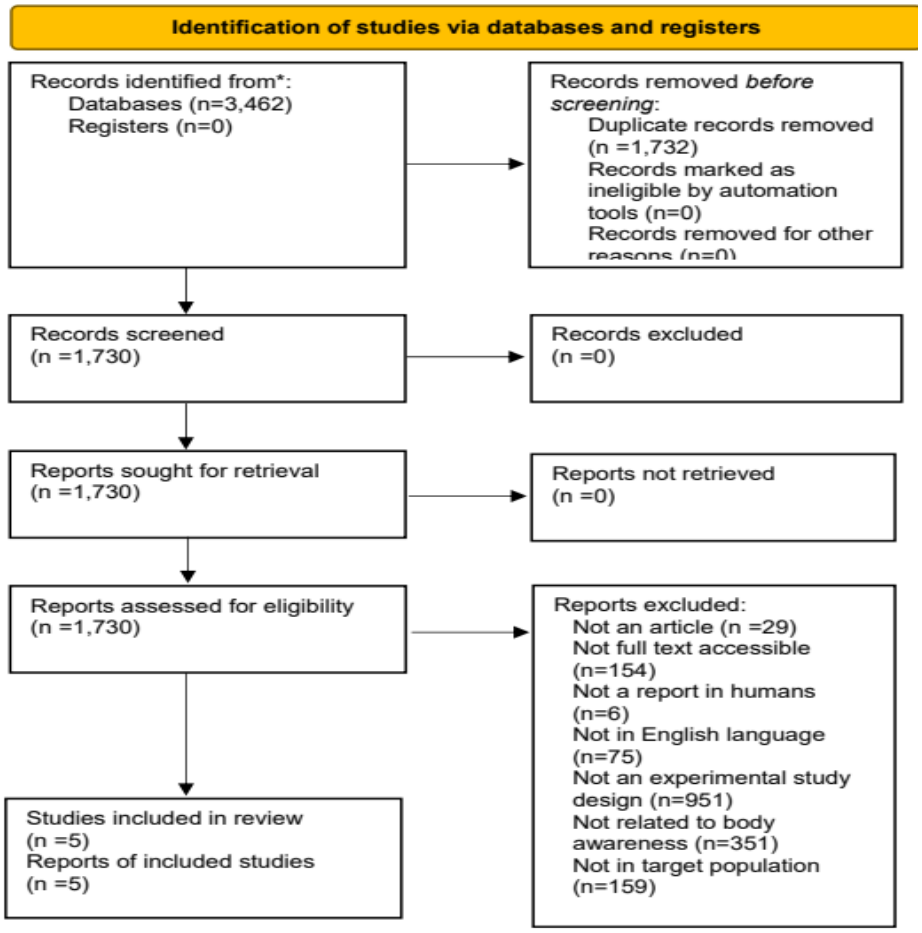

Fig. 1. The PRISMA flow diagram

2.2 Search strategy

A search was carried out on four major scientific databases— Web of Science, MEDLINE, PubMed, and Academic Search Ultimate databases— using the following search keywords: "interceptive awareness", "physical awareness" or "body awareness" and the results were extracted based on criteria.

2.3 Study Selection Process

The inclusion criteria applied in this systematic review were as follows: Original articles written in English; studies that focused on healthy adolescents; studies that included experimental study designs; and studies that applied assessments or interventions related to body awareness. Exclusion criteria were as follows: Studies not focused on healthy adolescents; study designs without intervention; and studies not relate to body awareness.

2.4 Data Extraction and Analysis

This study was extracted the following data from the five articles that met the eligibility criteria: author, publication year, sample size, age of subjects, assessments and interventions related to body awareness, intervention period, intervention effect, etc. First, the study designs of the included articles were analyzed according to Arbesman and Lieberman's (2012) five levels of evidence: Level I: Randomized Controlled Trial, Level II: Assignment to non-randomized treatment or control group, Level III: No control group, Level IV: Single case study design, Level V Study: Case reporting (Arbesman & Lieberman, 2012). Second, the PEDro scale was used to assess methodological quality (Cashin & McAuley, 2019). PEDro scores of 0–3 are considered "poor," 4–5 "fair," 6–8 "good," and 9–10 "excellent." Also, for tests evaluating complex interventions (e.g., exercise), a total PEDro score of 8/10 is optimal (Malysse et al., 2021). The PEDro scale consists of 11 items: eligibility criteria specified, random allocation, concealed allocation, groups similar at baseline, subjects blinding, therapists blinding, assessors blinding, less than 85% of dropouts, intention to treat analysis, between-group statistical comparisons, and point measures and variability of data (Maher et al., 2003). Third, the evidence presented in the selected studies was evaluated using the PICO process: population, intervention, comparison, and outcome(s).

3. Results and Discussion

3.1 Study Selection

A total of 3,462 studies were searched by means of a keyword search of the four databases used. A full-text review of 1,732 studies was performed based on the inclusion and exclusion criteria. Finally, the systematic review included five articles that met the eligibility criteria.

3.2 Quality of Evidence

In terms of Arbesman and Lieberman's (2012) design classifications, one study met the criteria for Level I (Daly et al., 2015) while the other four were Level III (Barnert et al., 2014; Clarke et al., 2022; Henje Blom et al., 2017; Le & Gobert, 2015) (Table 1).

Table 1. Level of evidence of selected articles

Levels of evidence	Definition	Frequency (%)
Ⅰ	Randomized, controlled trials	1 (20.0)
Ⅱ	Nonrandomized two-group studies	0 (0.0)
Ⅲ	Nonrandomized one-group studies	4 (80.0)
Ⅳ	Single-case experimental studies	0 (0.0)
Ⅴ	Case reports	0 (0.0)
	Total	5 (100.0)

Regarding methodological quality as measured by the PEDro scale, Le and Gobert (2015) had the lowest score (1/10), Barnert et al. (2014) and Clarke et al. (2022) scored 2/10, and Henje Blom et al. (2017) scored 3/10. These articles fell within the "poor" category. Daly et al. (2015) had the highest quality score (6/10), placing it in the "good" category (Table 2).

Table 2. The PEDro scale of selected articles

Articles PEDro criteria	Daly et al. (2015)	Le and Gobert (2015)	Barnert et al. (2014)	Henje Blom et al. (2017)	Clarke et al. (2022)
Eligibility criteria	Yes	No	No	Yes	No
Random allocation	Yes	No	No	No	No
Concealed allocation	No	No	No	No	No
Baseline similarity	Yes	No	No	No	No
Blinding of subjects	No	No	No	No	No
Blinding of therapists	No	No	No	No	No
Blinding of assessors	No	No	No	No	No
Measures of key outcomes from more than 85% of subjects	Yes	Yes	Yes	Yes	Yes
Intention-to-treat analysis	No	No	No	No	No
Between-groups statistical comparisons	Yes	No	No	No	No
Point measures and measures of variability	Yes	No	Yes	Yes	Yes
Total	6	1	2	3	2

3.3 General Characteristics of Studies

The average sample size was 57.4 (SD = 65.5; range 8–187). The age range was between 14 and 20. According to stage of adolescent development (Christie & Viner, 2005), four studies targeted mid-adolescence and one study targeted late adolescence. The average time of applying the interventions related to body recognition was 68.3 minutes (SD = 18.9; range 40–90), and the average duration was 9.3 weeks (SD = 3.1; range 6–16) (Table 3).

Table 3. Evidence Related to Body Awareness for Children (n = 5)

Author	Level of evidence/ Participants/ Stage of ages [a]	Intervention		Outcome measurements	Outcome
		Group	Session/ Time		
Daly et al. (2015)	Level I n = 37 Mid-adolescent (15–17 years) *Experimental group:* n = 19 *Control group:* n = 18	*Experimental group:* Yoga *Control group:* Physical education	40 minutes, three times per week, 16 weeks	ERICA, ERC, MAAS-A, SCS, MAIA	Pre-post data analysis revealed that emotional regulation was significantly increased in the yoga group compared to the control group.
Le and Gobert (2015)	Level III n = 8 Late adolescent (15–20 years)	*Experimental group:* Mindfulness-Based Youth Suicide Prevention Intervention	55 minutes, four times per week, 10 weeks	Survey (moment awareness, gained skills), HSR, TCS, PHQ, Open-ended interviews	Mindfulness-based interventions are acceptable for Native American adolescents with positive signs in terms of better self-regulation, less wandering, and reduced suicidal ideation.

Author	Level of evidence/ Participants/ Stage of ages [a]	Intervention		Outcome measurements	Outcome
		Group	Session/ Time		
Barnert et al. (2014)	Level III n = 29 Incarcerated mid-adolescent (14-18 years)	*Experimental group:* intensive meditation intervention	10 weeks	MAAS-A, HSR, TCS, PSS, Objective behavioural assessment, Investigate participants' experiences with open prompts	Early evidence suggests that meditation training for incarcerated youth is a feasible and promising intervention.
Henje Blom et al. (2017)	Level III n = 26 Mid-adolescent (14-18 years)	*Experimental group:* Training for Awareness, Resilience, and Action (TARA)	90 minutes, once a week, 12 weeks	RADS-2, MASC, ISI, CAMM, AFQ-Y, CDRS-R	TARA program was both feasible and acceptable in a sample of clinically depressed and/or anxious adolescents and could be delivered with fidelity.
Clarke et al. (2022)	Level III n = 187 Mid-adolescent (15.2± 1.3years)[a]	*Experimental group:* Yoga-based mindfulness program	One hour, once a week, 6 weeks	Open-ended questions about program satisfaction, CAMM, RCADS, PSS, Bandy and Moore's questionnaire on self-regulation,	These findings provide support for the effectiveness of a mindfulness-based yoga program for Hispanic/Latinx adolescents.

[a] Data presented as Mean ±SD.

Avoidance and Fusion Questionnaire for Youth (AFQ-Y), Child and Adolescent Mindfulness Measure (CAMM), Children's Depression Rating Scale-Revised (CDRS-R), Emotion Regulation Checklist (ERC), Emotion Regulation Index for Children and Adolescents (ERICA), Healthy Self-Regulation Scale (HSR), Insomnia Severity Index (ISI), Mindfulness Attention Awareness Scale-Adolescent version (MAAS-A), Multidimensional Anxiety Scale for Children (MASC), Multidimensional Assessment of Interoceptive Awareness (MAIA), Patient Health Questionnaire, (PHQ), Perceived Stress Scale (PSS), Revised Child Anxiety and Depression Scale (RCADS), Reynolds Adolescent Depression Scale Second Edition (RADS-2), Self-Compassion Scale (SCS), Teen Conflict Survey (TCS)

3.4 Results of Adolescent Body Awareness

In terms of intervention methods related to body awareness, the following were used in the reviewed studies: meditation (Barnert et al., 2014), yoga (Daly et al., 2015), mindfulness (Le & Gobert, 2015), mindfulness-based yoga (Clarke et al., 2022), and Training for Awareness, Resilience, and Action (TARA) (Henje Blom et al., 2017).

In terms of classification by psychosocial domain, psychosocial measurement tools were mainly used in studies related to body awareness that targeted healthy adolescents. The domain most frequently evaluated was mindfulness, followed by depression and self-regulation. Stress and impulsivity were the third most-frequently measured domains. Other domains that were evaluated include anxiety, avoidance and fusion, insomnia, sensitivity, and self-compassion (Table 4).

Table 4. Frequency of the Measurement of Psychosocial Domains

Frequency	Psychosocial domains
5	Mindfulness
3	Depression, Self-regulation
2	Impulsiveness, Stress
1	Anxiety, Avoidance and fusion, Behavior, Emotion regulation, Insomnia, Interceptive awareness

5. Discussion

This study assessed existing evidence regarding the potential impact of psychosocial aspects related to body cognition in healthy adolescents. We extracted studies published between 2010 and 2021 from four scientific databases. Five studies that met the eligibility criteria were included in the final review. In terms of level of evidence, there was one Level I study (Daly et al., 2015) and four Level III studies (Barnert et al., 2014; Clarke et al., 2022; Henje Blom et al., 2017; Le & Gobert, 2015). On the PEDro scale, four studies were considered "poor" (Barnert et al., 2014; Clarke et al., 2022; Henje Blom et al., 2017; Le & Gobert, 2015) and one was considered "good" (Daly et al., 2015). The article by Daly et al. (2015) did not evaluate blinding in terms of blinding performed by patients, therapists, or raters among blindings, but this is not possible due to the nature of the intervention. The main treatment methods related to body awareness were meditation, yoga, mindfulness, mindfulness-based yoga, and TARA. Regarding the effects of body awareness on the psychosocial domains of adolescents, mindfulness, depression, self-regulation, stress and impulsivity, anxiety, avoidance and fusion, insomnia, sensitivity, and self-compassion were evaluated.

As adolescence is a critical period of development (Zarrett & Eccles, 2006), the psychosocial health of adolescents is important and body awareness along with other factors may be related to adolescents' psychosocial development (Paus et al., 2008). About 10% to 20% of adolescents experience psychosocial health problems, with asymptomatic psychosocial health problems most prevalent (Viner & Booy, 2005). Psychosocial health is a multidimensional state of well-being that includes both negative indicators such as depression, anxiety, or behavioral problems and positive indicators such as self-concept (Dale et al., 2019).

n this study, it was confirmed that body awareness is a factor influencing the psychosocial health of adolescents. Adolescents develop identity and positive self-concept through psychosocial identification with the group to which they belong (Sussman et al., 2007). In this period, it was confirmed that the participation of adolescents in activities related to their own body awareness is related to the psychosocial development of adolescence. In future research, it is necessary to conduct a meta-study and verify the effect of participation in activities related to body awareness in adolescence on psychosocial factors.

This review has some limitations. Since many studies on body awareness have not been reported on adolescents, only a small number of published studies are included in the search process of this review. This demonstrates the heterogeneity of research methodology, design and quality. In addition, the number of participants in the studies was small; thus, the generalizability of the results is limited. To compensate for these limitations, further studies using different keywords and different databases should be conducted.

6. Conclusions

This study provided evidence for potential impact of psychosocial aspect related to body awareness in healthy adolescents. This systematic review is meaningful in that it investigated the area where adolescents' body awareness could potentially have an impact.

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