



# Leveraging the construct of physical literacy to promote physical activity for youth with obesity – A qualitative analysis of physical therapists' perceptions

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## ABSTRACT

**Background:** Promoting physical activity has been identified as a pillar of obesity treatment and prevention. However, youth with obesity often present with physical, affective, and environmental barriers to physical activity engagement. The construct of physical literacy, which has garnered international attention as a holistic approach to understanding human movement, may improve physical activity promotion strategies for youth with obesity. However, literature has shown that healthcare providers are not engaged with the construct of physical literacy.

**Methods:** This qualitative study utilized a phenomenological approach and interpretivist epistemology. Three phases of data collection included member checks, semi-structured interviews, and a focus group with physical therapists treating youth with orthopedic and sport injuries. Simultaneous data collection and inductive analysis was designed to identify themes reflecting how participants utilized the construct of physical literacy to promote physical activity in a clinical setting.

**Results:** Four overarching themes were identified in our analysis as strategies for promoting activity and physical literacy development: 1) Movement Experience, 2) Individualized Care, 3) Movement Momentum, and 4) External Factors.

**Conclusion:** The findings from this study highlight the usefulness of applying a physical literacy lens within physical activity promotion efforts among youth, which may be particularly important for youth with obesity. A high value was placed on the affective and behavioral determinants of physical activity. By applying a physical literacy lens, healthcare providers treating youth with obesity may be better equipped to address barriers and promote participation in physical activities that are enjoyable and build confidence. The findings from this study provide a foundation for future studies examining how healthcare providers can leverage the construct of physical literacy to improve physical activity outcomes among youth.

## 1. Introduction

Childhood obesity presents a significant health problem in the USA, with 19.7% of children and adolescents having obesity [1]. A likely contributor to the high prevalence of childhood obesity is the growing rate of physical inactivity, as less than one quarter of youth meet daily

activity recommendations [2,3]. While all youth are susceptible to inactivity, children with obesity are more likely to engage in lower levels of physical activity compared to their peers of a healthy weight [4,5] as a result of hormonal, metabolic, physiologic, psychologic, and environmental factors [6–11]. Increasing physical activity participation is a pillar of obesity treatment and prevention [12,13] however, physical

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activity-promoting interventions have historically had little effect on overall physical activity participation in youth with obesity [14–16]. This unfortunate reality highlights the need for healthcare providers to explore innovative strategies to promote activity for youth with obesity.

Considered a determinant of health, the concept of physical literacy is garnering international attention in the fields of physical education, sport, recreation, and population health [17–19]. Defined as “the physical competence, motivation, confidence, knowledge, and understanding to value and take responsibility for engagement in physical activities throughout life”, physical literacy offers a holistic framework for understanding human movement [20]. Physical literacy provides a novel perspective by placing equal value on the affective (motivation and confidence), cognitive (knowledge and understanding), and physical determinants of physical activity [17]. These determinants interact dynamically and ideally lead to a positive cycle of engagement with physical activity, but inversely could result in disengagement [18,21]. It is also assumed that one's physical literacy is strongly affected by social and environmental factors [18]. Given the complex and multifactorial nature of inactivity for youth with obesity, utilizing the concept of physical literacy may be advantageous for healthcare providers working with this population [22]. However, a recent scoping review found that healthcare providers are not engaged with the physical literacy concept, highlighting a need to examine the practical applications and utilization of physical literacy in a healthcare setting [23].

As experts in rehabilitation science and human movement, physical therapists are ideally situated to promote physical literacy development. In 2016, as an innovative approach to promote physical activity, pediatric physical therapists on the sports medicine team at the authors' institution were trained on the concept of physical literacy through a series of lectures and discussions. Since then, the team has treated hundreds of patients at increased risk of inactivity. These patients include youth with sports-related injuries, orthopedic conditions, pain, and other musculoskeletal complaints. The purpose of this study was to explore and understand how this team of pediatric physical therapists engage with the concept of physical literacy, particularly to promote activity among inactive youth. Exploring physical therapists' lived experiences in applying the concept of physical literacy may provide a better understanding of how healthcare providers can optimize physical activity promotion strategies for youth with obesity.

## 2. Methods

### 2.1. Theoretical and methodological approach

This qualitative study utilized a phenomenological approach and interpretivist epistemology, interpreting human experience through reflective inquiry [24], in order to understand how physical therapists experience and perceive the concept of physical literacy. A phenomenological analysis allows for an understanding of the “lived experiences” of the participants and the meaning of their experiences [25,26]. An interpretivist perspective enables the gathering of participants' perspectives on using physical literacy, acknowledging that multiple realities exist [27].

### 2.2. Study design, participants, and setting

This study employed a 3-phase qualitative design with member checks (see *Credibility* in Table 1), semi-structured interviews, and a final focus group (Fig. 1). All participants were outpatient physical therapists within the physical therapy department at a large pediatric hospital system, treating youth primarily with sport-related injuries, orthopedic conditions, and musculoskeletal complaints which are associated with obesity in childhood [28]. This department was selected because all physical therapists had undergone training on the concept of physical literacy within the last 5 years. Six of these participants had taken part in a quality improvement study in May 2020, the findings of which

**Table 1**

Definitions of common qualitative terminology.

Standards to ensure rigor in qualitative research	Strategies employed throughout study design, data collection, and data analysis
<u>Credibility</u> : The extent to which the research findings are congruent with reality [27]	-Utilization of an interpretive phenomenological approach -Use of 2 coders and 1 peer debriefer for triangulation of findings -Inclusion of a peer debriefer, a researcher not involved in the coding process who resolved discrepancies and provided additional perspectives -Use of member checks (e.g., reviewing findings with study participants for evaluation and changes) during Phase 1 and Phase 3
<u>Dependability</u> : The extent to which the results of the study are consistent with the data collected [27]	-An electronic audit trail was utilized throughout data collection and analysis, which described in detail the coding schedule, decisions made during code book development, peer debriefing discussions, and construction of the final themes and sub-themes.
<u>Confirmability</u> : The extent to which the researcher's interpretations are derived from the participants' voices [30]	-Audit trail utilized to document data analysis and decision-making between coders, including acknowledgement of existing researcher biases -Reflexive memos written by each coder to ensure prioritization of participant voices during data analysis -Use of member checking during the focus group to confirm accuracy of researcher interpretations
<u>Transferability</u> : The external validity, or “fittingness” of the reported results to a similar population [31]	-Use of rich, thick descriptions in reporting of study findings (participant quotes) -A purposeful sample of therapists with a wide range of experience and expertise were utilized for this study, allowing for use of study findings in other pediatric physical therapy populations.
<u>Authenticity</u> : Range of different perspectives in study findings [30,32]	-Recruitment of sixteen participants with varying degrees of clinical experience and knowledge of physical literacy

confirmed that physical therapists within the department were aware of and utilizing the concept of physical literacy within their practice. Ten additional physical therapists, from the same department and with the same training as the previous six participants, were recruited for interviews and a focus group. The participants of this study were a sample of convenience and were selected from a team approximately 30 physical therapists. Informed consent was received from all participants. Approval by the Cincinnati Children's Hospital Medical Center Institutional Review Board was obtained prior to the start of this study.

### 2.3. Data collection and analysis

Data collection and inductive analysis, which occurred simultaneously, took place from April 2021 to June 2021 and included three phases of interviews (Fig. 1). The primary investigator (MKP) completed all interviews independently. Interviews were conducted, audiovisual-recorded, and transcribed verbatim via a video communication platform, Zoom (Zoom Video Communications, Inc.).

Member checks, which entail reviewing of previously elicited findings with study participants for evaluation and changes, were conducted with 6 participants who completed interviews during a previous quality improvement project on physical literacy (Phase 1; Fig. 1). Patterns and initial themes from Phase 1 informed the development of a semi-structured interview guide for Phase 2 interviews. The interview guide included questions designed to elicit perspectives on ways to promote physical literacy development in a clinical setting. Individual interviews were conducted in Phase 2 until data saturation had been achieved.

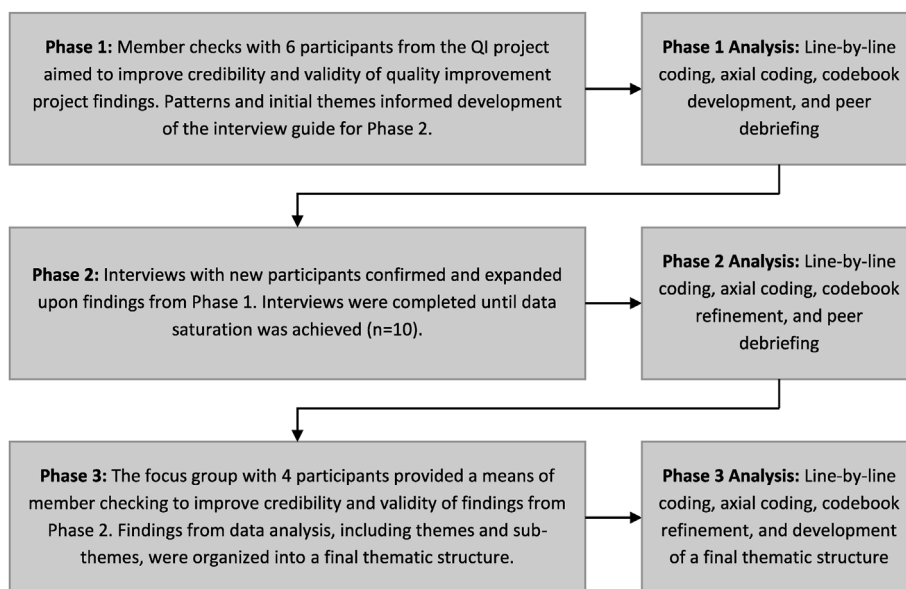


Fig. 1. Study design highlighting three phases of interviews.

Analysis of all transcribed interviews involved general inductive analysis, where multiple readings, reviewing, and data interpretation were undertaken to identify themes arising from the data. Line-by-line review of the transcripts was performed independently by two study team members (MKP, a physical therapist, and RP, a physical therapy student, both trained in qualitative methods) in order to generate initial codes related to the how they interpreted the participants’ responses [27]. Axial coding was then used to explore how these initial codes relate to one another and to the overall research question [29]. MKP and RP met frequently during each phase of data collection and analysis process to develop a coding structure which was revised and refined to reduce redundancy and identify emerging sub-themes. A third study team member (CZ, a physical therapist and researcher with experience in qualitative methods) met with the two coders after each phase to serve as a peer debriefer.

The final phase of data collection and analysis included a focus group with 4 participants from the Phase 2 interviews in order to improve credibility and validity of study findings (Fig. 1). 4 participants were intentionally selected based on their willingness to share experiences during Phase 2 interviews and differences between responses in order to stimulate rich, personal discussion between a small group of participants with varying perceptions. Subthemes identified during Phase 2 informed the development of a semi-structured interview guide for the focus group. Perspectives elicited during the focus group were used to refine the coding structure, resulting in a final thematic structure. A variety of strategies were employed to ensure that the methodological rigor of the data collection and analyses produced results that are trustworthy (Table 1).

3. Results

A total of 16 physical therapists (Table 2) participated in one-on-one interviews lasting from 22 to 48 min. Four of these therapists also participated in a focus group lasting 48 min. The majority of participants (10/16) referenced youth with overweight and obesity when discussing strategies to promote physical literacy development and physical activity participation.

Four overarching themes were identified in our analysis: 1) Movement Experience, 2) Individualized Care, 3) Movement Momentum, and 4) External Factors. Several subthemes associated with each of the four themes were also identified. An overview of each theme and associated subthemes is summarized below, with representative quotes reported in Table 3.

Table 2 Participant demographics.

Participant Alias	Sex	Years of experience as a physical therapist	Phase involvement
Brett	M	12	Phase 1
Alexis	F	13	Phase 1
Sam	M	5	Phase 1
Elizabeth	F	2	Phase 1
Robert	M	2	Phase 1
Joseph	M	5	Phase 1
Mike	M	18	Phase 2
Sara	F	1	Phase 2
Doug	M	8	Phase 2
Lauren	F	3	Phase 2
Zach	M	1	Phase 2
Rose	F	4	Phase 2
Carol	F	5	Phase 2 and 3
Oliver	M	10	Phase 2 and 3
Rachel	F	17	Phase 2 and 3
Jadyn	F	5	Phase 2 and 3

3.1. Movement experience

The ‘Movement Experience’ theme highlights how participants promote physical activity by providing a positive experience during physical therapy and addressing activity-related negativity derived from past physical activity experiences.

3.1.1. Provide a positive experience

Participants identified several ways in which they provide positive movement experiences for their patients, including making exercise fun and enjoyable. (Quote 1.1, Table 3). They also discussed gamifying exercise (applying game elements, such as scoring or competition, to exercise), providing positive encouragement, and instilling a sense of accomplishment with physical activity. Participants voiced being their patient’s “biggest cheerleaders” (Rose) and providing “as many wins as possible” (Quote 1.2, Table 3) related to movement and physical activity in order to promote confidence and enjoyment of activity.

3.1.2. Reduce Movement Negativity

Participants also acknowledged the need to reduce negative perceptions related to movement. Jadyn described creating the opportunity to provide a “safe place”, free from bullying or judgment, for patients to try

Table 3

Themes and subthemes with support quotes.

<u>1. Movement Experience</u>	
<i>Provide a Positive Experience</i>	1.1) "The biggest thing, I think, is just to make movement and exercise fun and to not make it like a punishment or even like a homework thing that has a negative connotation ... and to build confidence by not being super nitpicky about all of our biomechanics details" (Rachel)
<i>Reduce Movement Negativity</i>	1.2) "Giving them as many wins as possible." (Lauren)
	1.3) "I almost feel like sometimes you can be helpful just by being a safe place to try some things where you're not going to be laughed at or they're not going to fail" (Jadyn)
	1.4) "I help them understand that some pain is okay like 'that's a stretch' when they feel their hamstring stretching and say it hurts ... you know that's a normal thing and it's not bad and it's actually good for you .... or soreness after exercise, you know muscle soreness is good, so I spend some time educating" (Mike)
	1.5) "Forcing them to do something that they're not ready for can just have a detrimental effect, rather than a positive one." (Sam)
<u>2. Individualized Care</u>	
<i>Physical Activity Assessment</i>	2.1) "I guess one of the big things is getting down to the reason why, why are they less active ... is it because they don't feel confident with running or they trip ... because of the environment and they don't have spaces to play safely ..." (Jadyn)
<i>Ask What Kids Want</i>	2.2) "I think also getting their thoughts and feelings on movement and exercise, you know, if some people say 'oh man, I really just hate exercise, I'm not really into that' ... diving a little bit more into the why behind that." (Doug)
	2.3) "Figuring out why they don't like it, is it because they're nervous, or they're embarrassed to do it in front of people, or they just feel like they're not really good at it" (Rachel)
	2.4) "The whole point of, I think, physical literacy is that energizing piece and it's got to be energizing for them, they gotta want to do it." (Carol)
<i>Meet Kids Where They Are At</i>	2.5) "Yes, the hardest thing is making sure that they're setting the goal and we're not making this great suggestion. And it's easy for us as PTs to just make it for them, but making sure that they're the ones setting the goal" (Alexis)
	2.6) "And so, encouraging or you know, at least, giving them the option, how it doesn't have to be a team sport, you can do it on your own or with your family and then you don't have to feel this social pressure as well." (Sam)
<i>Movement Autonomy</i>	2.7) "The population is a lot different everywhere, and I think you're going to see different barriers or different access based on socioeconomic status of the families that you treat, so I think, just like the creativity point for us as clinicians has to be pretty high to meet those patients were there at." (Rose)
	2.8) "Getting the patient to talk more about it and planning it with them, making it a collaborative session and saying 'okay, so what are your goals, what would you like to do?'" (Sam)
	2.9) "I think I fall back a lot on just self-management techniques, so I use a lot of open-ended questions of just like 'tell me what interests you' or 'tell me what you enjoy doing for fun' ... And then, once they have identified something it's building upon that ... how easy is this to actually carry out or is this a new activity that they've never done before that they're just want to start for the first time" (Alexis)
	2.10) "How can we make it manageable for the kid, how can they become the owner of it" (Sara)
<u>3. Movement Momentum</u>	
<i>Demonstrate Progress with Goals</i>	3.1) "The only way to build confidence is to have little successes so as you help them set the goals, make sure that they are really manageable goals that they're able to achieve, because achieving those goals will build that confidence." (Sam)
<i>Spark an Interest</i>	3.2) "To build confidence in anything it's about giving little wins and a graded exposure to whatever the thing you're not confident in" (Joseph)
	3.3) "Give them that introspective perspective, like 'how are you feeling' and that kind of thing. I'm telling them to self-reflect but also saying 'this is what I'm seeing', you know, 'you're really making big gains here.' I think also going back, as you go on with the plan of care, 'hey look when you first started, you were able to do this, and now look at what you're able to do, and you're not even you're not even sweating, you're not even breathing heavy.'" (Doug)
	3.4) "You got to have those few wins early to establish a little bit of a resiliency, a little bit of pride and about overcoming something challenging." (Brett)
	3.5) "Like so maybe I do give them a list of exercises to address certain impairments, but then I'll maybe write at the bottom like five to 10 min of activity of your choice or look into yoga videos" (Carol)
	3.6) "You know my goal is more to get them doing something now. Can I get them to do something that, I hope, they'll enjoy and that they'll find some kind of fulfillment in and that they'll then carry on." (Mike)
<i>Plan to Move</i>	3.7) "Asking 'what do you like to do for fun with your friends' so maybe not a group activity or a class or anything like that, but just 'what do you like to do outside' and try to encourage them to just get outside more." (Alexis)
	3.8) "I try to get the ball rolling in their brain of how they're going to keep this up" (Rose)
	3.9) "I think that's important that they have some sort of structured plan in mind at discharge" (Zach)
<u>4. External Factors</u>	
<i>Technology</i>	4.1) "This is crazy but it's just the world we live in. Right now, it's way harder as a parent to have your child be active." (Mike)
<i>Parents</i>	4.2) "Because 'Netflix' is an easier and a cheaper babysitter compared to a playground or sports ... how do you compete with 'TikTok' I mean it's with you all the time and it literally changes for you" (Oliver)
	4.3) "I think recognizing that technology is such a big piece in these kids' lives and maybe utilizing that to our advantage ... And I think especially for those kids who are non-movers, that might make it way easier for them to be active ... I think it is a barrier, but I also think that we could use it for our advantage to get them moving." (Carol)
	4.4) "There are going to be some parents that really respond well to the information and some that really just kind of brush it off, but if you're not including them in the conversation, I think you're leaving a huge either source of motivation or a huge like catalyst to making something happen." (Sara)
<i>Community</i>	4.5) "You need kids shuttled to A, B, and C and all that kind of stuff and then trying to get them fed and make sure they do their homework and it's like where does exercises fit in and so I'm sure that's very challenging for a lot of families" (Joseph)
	4.6) "Then you've got another kid who's in the inner city, whose parents work and it's not a safe place. You know so they're pretty much stuck inside their apartment all day long" (Mike)
	4.7) "You hope you find something that they'd like to do, and then I try to gauge what their resources are. So, if there's a chance for them to go to a camp, or if there's a chance for them to go to the YMCA and play basketball with their friends or just if they have a park nearby and kind of encourage that." (Oliver)

new activities (Quote 1.3, Table 3). Others reduced negativity by not forcing activity, avoiding the use of exercise as a punishment or chore, and by providing anticipatory guidance related to muscle soreness that may otherwise be perceived by the patient as discomfort.

### 3.2. Individualized Care

Within the 'Individualized Care' theme, participants expressed the need to tailor activity promotion strategies based on the child's experiences, abilities, beliefs, and goals.

#### 3.2.1. Physical Activity Assessment

In order to provide an individualized recommendation, participants perceived the need to assess not just the amount and type of activity a child participates in, but also their "thoughts and feelings on movement" as Doug stated (Quote 2.2, Table 3). The cohort described how inquiry into past activity experiences, lack of confidence, and the patient's environment can provide insight on current activity behaviors. Collectively, they perceived these activity-related emotions to be a crucial component of activity behavior.

### 3.2.2. Ask what kids want

Similar to exploring a patient's beliefs about activity, participants also perceived asking about a patient's goals and interests to be an important component of physical literacy development. Participants discussed how conversations about a patient's activity-related interests and motivators could lead to activity recommendations that would be enjoyable, resulting in improved activity participation.

### 3.2.3. Meet Kids Where They are at

Once a patient's abilities, beliefs, and interests had been assessed, participants acknowledged they could then provide goals and recommendations that would be developmentally appropriate, achievable, and instill confidence. Sam discussed how he removes social pressures by encouraging patients to be active with family or individually, if sports or structured activity has not been enjoyable (Quote 2.6, Table 3).

### 3.2.4. Movement autonomy

In an effort to promote long-term activity behavior change, participants expressed the importance of helping patients establish autonomy with movement and exercise by using self-management techniques (Quote 2.9, Table 3) and giving them sovereignty with goal setting (Quote 2.8, Table 3). Participants discussed making goal setting collaborative, helping patients incorporate activity into their routines, and giving patients an opportunity to plan their own physical activity in the future.

## 3.3. Movement Momentum

The 'Movement Momentum' theme highlights physical therapist perceptions on how to help youth build momentum, or consistent behaviors, with physical activity participation. By starting small and gradually building confidence with participation, participants believed they could promote long-term change.

### 3.3.1. Demonstrate progress with goals

Collectively, the group expressed how they build 'momentum' with physical activity by helping patients achieve goals. A number of participants emphasized the importance of having patients achieve "wins" or "successes" with activity in order to develop confidence (Quotes 3.2 and 3.4, Table 3). Doug referenced the use of objective measures and encouraging self-reflection to help patients recognize their progress (Quote 3.3, Table 3). Lastly within this sub-theme, participants stressed the importance of praising and celebrating the patient's successes to further promote confidence with activity.

### 3.3.2. Spark an interest

Participants also helped develop 'momentum' by sparking patients' interest in physical activity. They did this by encouraging new modes of play as part of the home exercise program in order to facilitate discovery of an enjoyable activity (Quote 3.5, Table 3). Participants also attempted to spark interest in movement by exposing patients to new sports and activities within the clinic.

### 3.3.3. Plan to move

Lastly, within the 'Movement Momentum' theme, participants explained how they establish plans for patients' continued activity as a course of physical therapy concludes. They acknowledged how this is often done through expansion of a home exercise program. Zach discussed setting new activity goals for the patient at discharge and ensuring they have a plan to achieve those goals (Quote 3.9, Table 3). Others discussed scheduling a 'booster visit' for patients several weeks after physical therapy discharge to review goals and discuss new ideas on how to stay active.

## 3.4. External Factors

Within the final theme, 'External Factors', participants acknowledged that physical literacy development and activity promotion require

consideration of factors beyond the child, including technology, the child's family, and the community they live in. Participants identified these factors as both barriers and facilitators of physical literacy development. They also expressed the belief that physical therapists have an opportunity to positively influence these factors.

### 3.4.1. Technology

Participants commonly reported technology, particularly in the context of the COVID-19 pandemic, to be a significant barrier to physical activity participation, and ultimately, physical literacy development. Oliver and Mike both expressed how technology is an easy, cheap, and entertaining alternative to being active or participating in sport (Quotes 4.1 and 4.2, Table 3). However, Carol and others identified the potential for technology, including wearables, active gaming, and YouTube videos, to be an easier and more enjoyable starting point for increasing activity, particularly for those youth who prefer screen time to structured activity (Quote 4.3, Table 3).

### 3.4.2. Parents

Sara and others expressed the importance of including parents in conversations regarding activity promotion (Quote 4.4, Table 3). Many participants held the perception that parents often face difficulties when promoting activity for their children. They described cost, transportation, and unfamiliarity with sports or activity as barriers for parents. Participants expressed how they guide parents by providing activity-related education and spurring discussions about local resources.

### 3.4.3. Community

Lastly, within the 'External Factors' theme, participants expressed the impact of the environment on a child's physical literacy development. They discussed how a child's environment can serve as a disparity for activity participation, noting that safety and resources are often barriers to participation. Yet, Oliver discussed how physical therapists can engage families in conversations regarding community opportunities and empower them by providing additional resources and tools to promote involvement (Quote 4.7, Table 3).

## 4. Discussion

The purpose of this study was to explore and understand how physical therapists engage with the concept of physical literacy. The four themes identified from the participants' perspectives provide insight on how pediatric physical therapists utilize the construct of physical literacy to promote activity in a healthcare setting. The findings highlight the usefulness of applying a physical literacy lens within physical activity promotion efforts among youth who are inactive, including youth with obesity. Among all participants, a high value was placed on the non-physical domains of the physical literacy construct, resulting in the identification strategies healthcare providers can use to influence the cognitive and affective, as well as the social and environmental factors that may impact physical literacy development.

### 4.1. Physical literacy and childhood obesity

The themes identified in this study demonstrate the applicability of utilizing a physical literacy approach to promote physical activity for youth with obesity. These findings may be of particular importance given the higher rates of inactivity among this population [4,5], the additional barriers they face to engaging in activity [6-9], and the need for physical activity as treatment and management of obesity [12,13]. Through use of a physical literacy lens, participants in our study emphasized how the emotions and beliefs related to physical activity are critical to an individual's activity behavior and thus, need to be assessed. While youth with obesity demonstrate deficiencies in the physical domain that need to be considered [8,33,34], strategies described in our study focus primarily on the affective, cognitive, and behavioral domains. Overwhelmingly,

the participants referred to the critical actions of engaging the patient in open, non-judgmental conversations, and taking the time to understand what experiences and factors may influence inactivity. The strategies identified by participants include provision of positive encouragement during movement tasks to improve confidence, implementation of ability-appropriate challenges to ensure that a patient experience success with movement, and emphasis on the patient's progress towards activity-related goals. Participants strategized that collaborating with patients on enjoyable activities, incorporating the patient's interests, and helping the patient identify goals would improve overall motivation to be active. Participants also perceived that long-term activity engagement can be fostered within a clinical setting by helping patients develop independence with physical activity, helping them create an individualized plan, and giving them the tools to create future activity plans of their own.

These strategies and application of a physical literacy lens may help healthcare providers address many of the physical activity-related challenges faced by youth with obesity. These youth are known to report physical discomfort during activity, including shortness of breath and fatigue [6,7] and musculoskeletal complaints [28], which may be addressed by providing anticipatory guidance for patients, as suggested by participants in the *Reduce Movement Negativity* subtheme. Physical challenges can also be addressed by encouraging patients to start with light physical activities, participating in resistance training which may be more tolerable [35,36], and providing ability-appropriate physical activity (*Meet Kids Where They're At* subtheme). Referral to a physical therapist may also be warranted to screen and address these physical challenges or musculoskeletal complaints. Disinterest with physical activity [6], what may appear has a lack of self-motivation, could actually be the result of prior negative movement experiences, and could be addressed by helping the patient discover new modes of physical activity that would be enjoyable or “energizing” as one participant stated (Quote 2.4, Table 3). For example, a patient passionate about video games may benefit from active gaming or virtual reality as a starting point for increasing physical activity participation [37]. Youth with obesity also report greater difficulty with physical tasks, teasing, bullying, and past failures as barriers to physical activity participation [6,38,39]. The themes identified in our study indicate that these barriers may be addressed by maintaining a positive and confidence-boosting approach to activity promotion. This can be accomplished by starting with small,

achievable goals and by providing positive encouragement regarding physical activity challenges. Participants in this study also believed that providers should avoid treating physical activity as a chore or mandatory prescription, but instead focus on the fun associated with activity participation.

The strategies identified in this study align well with tools currently used to promote behavior change in youth with obesity. Similar to motivational interviewing techniques, including the 5As framework [40, 41] (Ask, Assess, Advice, Agree, Arrange/Assist), our themes highlight the importance of taking an open and empathetic approach to assessment, identifying barriers, using shared decision-making, promoting of self-efficacy, and using collaborative goal setting [42]. Inquiring about how negative past physical activity experiences impact activity behaviors (*Physical Activity Assessment* subtheme) can be compared to Trauma Informed Care principles which have been identified as vital in the care of youth with obesity [43,44]. The themes identified by participants also align with the behavior change technique of cognitive restructuring by replacing negative perceptions of activity (difficult, failure, bullying, teasing, discomfort) with productive thoughts and perceptions (activity as fun, enjoyable, and healthful) [45]. While consideration of FITT-VP principles [46] (frequency, intensity, time, type, volume, and progression) is important to consider, our findings suggest it may be a priority to initially focus on enjoyment, self-management, and building confidence. Findings from this study also support previously proposed strategies for promoting activity among youth with obesity which highlight consideration of psychosocial factors, individualized treatment planning, collaborative goal setting, and enjoyment with activity participation [8,47]. As William's et al. demonstrated previously for the care of gender diverse youth with obesity [48], a reframing the 5As focused on physical literacy development may help healthcare providers provide holistic and compassionate activity counseling (Table 4).

#### 4.2. Incorporating the socioecological framework

A key tenet of the physical literacy framework is the acknowledgment that one's physical literacy is influenced by social and environmental factors [49]. The themes elicited by participants in our study highlight this through recognition of the positive and negative parental influences on the child's activity level. For example, parents who are inactive may be less likely than physically active parents to encourage

**Table 4**  
Reframing the 5As to include physical Literacy-based strategies for activity promotion.

	<u>Ask</u>	<u>Assess</u>	<u>Advise</u>	<u>Agree and Assist</u>	<u>Arrange and Affirm and Acknowledge</u>
<b>Physical Literacy-Based Care</b>	Ask about goals, motivators, and interests related to increasing physical activity	Assess current and past experiences with physical activity. Assess feelings about activity and barriers to being active.	Advise on the benefits of participating in regular physical activity and how they relate to the patient's unique goals. Advise on modes of physical activity that are available based on the patient's abilities, preferences, and availability.	In collaboration with the patient, agree on an achievable activity goal. Assist and promote autonomy by helping the patient establish routine with activity. Assist patients and families by providing community physical activity resources.	Arrange a plan to follow up on activity goals. Affirm the patient's efforts to increase activity and demonstrate progress towards goals. Acknowledge that increasing activity can be difficult but is a journey and can take time.
<b>Example</b>	Are interests or motivators focused primarily on enjoyment? Are goals related to health outcomes that increasing activity could improve? Is improving physical measures (strength, endurance) beneficial for participation in school, sports, or future careers?	Likes and dislikes during past sports or PE. Feelings during and after activity (enjoyment, intimidated, fatigued, sore, bored). “What would be your favorite physical activity to participate more in?” “What keeps you from doing more activity?”	Consider lighter activities, such as yoga, dancing, walking, for patients who do not enjoy demanding activities. Consider resistance training for patients that dislike aerobic activities but enjoy physical tasks. Encourage active gaming for youth invested in video games.	Ensure the goal is driven by the patient, including the mode of activity and amount of participation. Provide detailed information regarding local parks and recreation centers, specific activity programs, and active community events. Consider financial or transportation limitations.	Provide positive encourage and celebrate all efforts to increase physical activity. Positivity regarding activity should be a focus, especially if the patient has negative emotions related to activity. Explain to the patient that increasing activity can be difficult given their unique barriers.

their children to participate in sport and activity [50,51], thus limiting opportunities for the child to develop physical literacy [49]. Similarly, a community that is unsafe for outdoor free play or one with limited resources will pose an obvious barrier to physical activity participation [6, 52]. Socioeconomic status can also limit participation in structured physical activity, with cost of sports being identified as a common barrier [6,52–54]. A lack of opportunity to participate can contribute to intra-personal challenges, and ultimately disengagement, among youth with obesity.

The themes elicited by our participants support consideration of the socioecological factors when promoting physical literacy. Participants discussed how they educate parents on how to provide an environment that supports physical literacy development, with regular opportunities for structured and unstructured physical activity participation. They also highlighted how they serve as a bridge between families and the community by providing education regarding local physical activity opportunities. It would be advantageous for healthcare providers who treat youth with obesity to familiarize themselves with physical activity opportunities in their communities, including local parks, recreation centers, and youth sports opportunities, in order to provide families with this information.

#### 4.3. Healthcare providers role in developing physical literacy

While physical literacy has primarily been studied in the context of physical education, sport, and public health, this study supports the use of the physical literacy framework in a healthcare setting [19,23,55]. It is the first to examine qualitatively how healthcare providers engage with the construct of physical literacy in a clinical setting and provides practical applications for how the framework can be integrated to optimize activity promotion. Among healthcare providers, physical therapists are well positioned to promote physical literacy development given their expertise in human movement and time spent with patients [56]. As O'Malley et al. highlighted, youth with obesity present with neuromusculoskeletal impairments and are at risk for pain and injury which physical therapists are trained to address [8]. Physical therapists are also well-positioned to provide positive movement experiences and promote confidence with physical activity given their primary intervention is exercise based. Physical therapists often work with patients over the course of several weeks, allowing for the development of a close relationship that is conducive to assessment of personal barriers and behavior change intervention. For these reasons, patients who experience difficulty with physical activity, whether due to pain, injury, or behavior, would benefit from a referral to a physical therapist.

While this study explored the perceptions of physical therapists and applies to youth with obesity, all healthcare providers have an opportunity to positively influence a patient's physical literacy development, regardless of weight status or age. By being curious about a patient's experience with physical activity, providers can assess physical literacy development and provide guidance to promote engagement in enjoyable physical activities. However, to truly optimize activity promotion efforts and ensure all people have the opportunity to develop physical literacy, change must occur across sectors, at the level of policy, community, and school setting which healthcare providers can advocate for.

#### 5. Limitations

This qualitative exploration of how physical therapists engage with the construct of physical literacy has limitations. Given that our participants are from the same hospital system, selection bias is inherent. However, this population is unique, and ideal to study, given their exposure to the physical literacy construct. The selection may also result in limited transferability of findings to other professions and populations, but this study provides an important starting point for examination of how healthcare providers engage with the construct. An additional limitation is that the interview guides utilized focused on youth who are

physically inactive, not youth specifically with obesity. However, the majority of participants referenced youth with overweight or obesity when discussing the identified strategies. While future qualitative research should focus solely on physical literacy development for youth with obesity, we feel these findings can be applied to all youth who are inactive, including those with and without obesity. The exploratory nature of our qualitative study is also limiting, given that patient outcomes related to physical activity promotional efforts were not assessed. Future research with a more diverse cohort of participants and patients is warranted in order to assess how other healthcare providers engage with the construct of physical literacy and how utilization of physical literacy-focused interventions, including application of these strategies, impact patient outcomes.

#### 6. Conclusion

This qualitative study examining physical therapists' perceptions advances understanding of how healthcare providers engage with the construct of physical literacy. The findings from this study highlight how a physical literacy approach may be beneficial for promoting activity among youth with obesity. Applying a physical literacy lens may assist healthcare providers in identifying and addressing barriers to activity engagement, including motivation, confidence, and social and environmental factors. Findings from this study provide practical, activity-promotion strategies that providers can incorporate into the care of youth with obesity. This study demonstrates how healthcare providers can be key advocates of physical literacy development, yet future research is warranted in order to better understand how this influences patient outcomes.

#### Ethical review

This study was reviewed by the Cincinnati Children's Hospital Medical Center Institutional Review Board.

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No funding was provided for this study.

#### Author contribution

MKP, CZ, and MVP designed the study. MKP conducted the interviews. MKP, RP, and CZ analyzed the data. MKP and CZ wrote the original draft. MVP and RP assisted with all manuscript edits.

#### Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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#### Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.obpill.2022.100054>.

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