

## **Community College Students' Perceptions of Physical Literacy During a Wellness and Activity Class**

### **Author Information**

David E Wiederrecht<sup>1</sup>, Peng Zhang<sup>2</sup>

<sup>1</sup>Kinesiology Department, Lone Star College-University Park, Houston, TX, USA

<sup>2</sup>College of Health Sciences, East Stroudsburg University of Pennsylvania, PA, USA

*Corresponding Author:*

*Dr. Peng Zhang*

*Email:* [pzhang@esu.edu](mailto:pzhang@esu.edu)

*Article Type: Original Research*

### **ABSTRACT**

**Purpose:** This research aimed to examine students' perceptions of physical literacy (PL) through a wellness and activity class in a community college.

**Methods:** Participants were young adults ( $n = 13$ ), who were enrolled in a kinesiology wellness and activity course designed to enhance students' PL. A mixed methodology was employed to conduct the study. The dependent measure consisted of a perceived physical literacy instrument (PPLI) and semi-structured interviews. The intervention of the study was a semester-long wellness course designed to enhance students' PL. **Results:** Paired  $t$ -tests from the PPLI showed significant changes with one of the four attributes of PL: motivation ( $p < .0125$ ). The individual interviews and assignment analysis revealed five themes: *I feel confident, I got better because I was helped, I am motivated, I move better, and I learned new information*. Participants reported improved perceptions of their PL.

**Conclusion:** The findings of the study demonstrated that a well-designed wellness course at the community college level had the potential to improve young adults' PL.

**Keywords:** Physical Literacy, Wellness, Student Perception, Physical Activity, Resistance Training

## 1. INTRODUCTION

Physical literacy (PL), as outlined by Whitehead (2010), encompasses motivation, confidence, physical competence, knowledge, and understanding, encouraging individuals to value and assume responsibility for lifelong engagement in physical activities. This multifaceted concept, integral to physical education curricula and objectives (Petrie et al., 2021; Sum et al., 2016), emphasized the connection between physical activity and health (McKay, Hoch, Hoch, & Dlugonski, 2023). A person who is physically literate possesses a wide array of movement skills, confidently utilizing them in different life situations, thereby fostering comprehensive development from childhood through adulthood (Lundvall, 2015; Yapar & Akinci, 2023).

There is a global consensus that the primary goal of school physical education is to cultivate individuals who will consistently engage in physical activity throughout their lives. In this context, PL assumes a pivotal role within the physical education curriculum. Students are expected to direct and regulate their exercise and physical activity experiences autonomously. Teachers must strive to establish inclusive learning objectives and tasks that empower students to master movement skills independently, fostering a positive attitude toward physical activity participation and promoting self-awareness (Tremblay & Lloyd, 2010). It is evident that the development of PL should extend beyond children and early adolescents, with exploration into various age groups and demographics. Godbout and Nadeau (2022) likened the development of PL to the stages of a space shuttle's flight, where each educational level—elementary schools, high schools, and colleges—represents successive thrusts propelled by various educational segments. According to this analogy, college years are particularly crucial for ingraining exercise and physical activity habits, as individuals who are active during their college years tend to remain active into early adulthood after graduation.

While college years play a crucial role in developing an individual's physical literacy, research on this subject has mainly focused on K-12 settings, especially in the United States (Ma et al., 2020). This narrow focus has led to a lack of understanding regarding the most effective practices for promoting PL in this demographic (Sum, 2016). Only a handful of studies have investigated PL development among young adults, with limited attention given to interventions within college populations. For instance, Kwan et al. (2020) evaluated the impact of a PL intervention on first-year university students, finding that those in the intervention group showed increased PL following an 11-week, once-weekly intervention, whereas the control group experienced a decrease. These findings suggested that interventions targeting PL intentions in young adults may have the potential

to enhance PL and influence physical activity levels. Similarly, Yapar and colleagues (2023) explored the association between perceived PL levels and academic disciplines among university students. Their study revealed that undergraduates majoring in sports science demonstrated higher perceived PL levels compared to those in non-sports science disciplines, regardless of gender. These research insights lay the groundwork for future studies aiming to identify best practices for promoting PL among college students.

College students are facing a significant issue of physical inactivity, marked by a rise in sedentary lifestyles and rates of overweight and obesity. For instance, only 34% of young adults aged 18-24 met both aerobic and muscular strength physical activity guidelines (Yapar & Akinci, 2023). This trend persisted into adulthood, with just around 14% of individuals over 65 meeting recommended activity levels (McKay, Hoch, Hoch, & Dlugonski, 2023). Concurrently, mental health concerns among college students are increasingly alarming to educators and parents. College students, the final stage of formal education, are navigating pressures from changing environments and adjusting to new social and academic settings. Research has highlighted troubling rates of psychological distress, including anxiety and depression, among this population (Regehr et al., 2013). Establishing a balance between physical and psychological well-being is crucial for fostering overall wellness among young adults (Ma et al., 2021).

The current study acknowledges the complexity and lack of consensus in defining PL. Accordingly, PL was defined as understanding the 'why' behind engaging in safe and consistent physical activity and possessing the necessary skills to do so, with this understanding developing along a continuum from rudimentary to fully developed (Lundvall, 2015; Tremblay et al., 2018). The primary aim of this exploratory mixed methods design study was to evaluate the perceptions of PL among community college students enrolled in a wellness and activity course. Additionally, we sought to assess whether there were any changes in perceived motor competence among these students throughout the duration of the physical literacy-focused wellness and activity course. Our hypothesis posited a positive shift in both PL scores and levels of physical activity among participants.

## **2. METHODS**

An exploratory mixed methods research design integrates both quantitative and qualitative data collection and analysis methods within a single study, as outlined by Creswell and Clark (2017). In this study, a quasi-experimental design was utilized to gather pretest and posttest scores regarding individuals' perceived PL. Additionally, a semi-structured interview format was employed for the qualitative component to elicit participants'

opinions on the subject matter. This comprehensive approach allows researchers to thoroughly investigate the research topic, facilitating the integration of findings derived from quantitative and qualitative analyses.

## **2.1 Participants**

Nineteen students, comprising individuals enrolled in a one-credit, 48-hour wellness and activity course at a community college in the southern United States, were recruited for this study. Of the nineteen students initially recruited, thirteen successfully completed the study. The researcher remained unaware of the participants' status until grades were released. Participants' ages ranged from 14 to 27 years old, with eight falling within the college-aged bracket and five being high school students attending the on-campus high school. Before participation, all individuals provided signed consent forms and the research received approval from the university's Institutional Review Board (IRB).

## **2.2 Independent Variables**

The independent variable was a semester-long wellness and activity course designed to enhance PL, the dependent variable. This course was structured to include both lecture and laboratory sessions. The lecture sessions were aimed at discussing theories, imparting knowledge, and fostering practical behaviors related to the development of PL. The laboratory sessions incorporated purposeful physical activities intended to promote quality movements by targeting biomotor abilities (Sercan & Serkan, 2019) and various planes of movement, thereby enhancing participants' confidence, motivation, and motor competence. The course was structured to meet twice weekly, with each session lasting 40 minutes. Following each class session, the researcher documented observations regarding the covered content and students' responses in a personal journal. Additionally, during the fourth class session and the initial exercise check-in, the researcher recorded the sequence of exercises observed by each student and made notes on technical cues, provided encouragement, offered suggestions, posed questions, and highlighted any movement challenges encountered by the students.

The course was taught by an instructor with seven years of experience teaching the course and 30 years of experience in kinesiology. He held certifications as a Certified Strength and Conditioning Specialist (CSCS), a Fundamental Capacity Screen (FCS) specialist, and a USATF Level I and Level II coach specializing in sprints, hurdles, and relay events.

## **2.3 Data Collection**

### *The Pre-Post Survey*

The pre-post survey utilized a revised version of the Perceived Physical Literacy Instrument (PPLI) (Ma et al., 2020; Sum et al., 2018), comprising nine statements rated on a 5-point Likert scale. This survey was administered anonymously online via Qualtrics® (see Appendix A). The PPLI was employed to gauge participants' perceived PL (Ma et al., 2020; Sum et al., 2018), with modifications to accommodate variances between British and American English. Following a holistic approach, the PPLI encompassed four key attributes of PL: confidence, motivation, knowledge and understanding of the benefits of physical activity (PA) participation, and motor competence (IPLA, 2017; Whitehead, 2013). The adapted PPLI comprised nine statements rated on a 5-point Likert scale, ranging from "strongly agree" (1) to "strongly disagree" (5). The post-PPLI mirrored the pretest, featuring the same nine statements and Likert scale, with additional open-ended questions provided after each statement.

### *Focus Group and Individual Interviews*

A liaison with expertise in qualitative research managed and recorded each session using WebEx video conferencing. Following the interviews, she transcribed the participants' responses utilizing the WebEx platform. The interview process comprised of two focus group sessions, with the first group comprised of six adult students and the second group comprised of four high school-aged students. Additionally, three individual interviews were conducted. Employing a semi-structured interview format, students were provided with the opportunity to articulate their perspectives on physical literacy (PL), physical activity (PA), and the activities conducted in the class, as outlined by Rubin & Rubin (2012). These interviews encompassed a combination of primary, probing, and follow-up questions (Rubin & Rubin, 2012).

## **2.4 Statistical Analysis**

Analysis of survey data and qualitative data formed integral components of this mixed methods research study. The survey data was derived from the PPLI survey, supplemented by information obtained from graded course assignments and voluntary interview participation. Students completed the PPLI surveys either by scanning a QR code provided during class lectures or by utilizing a code distributed via email. Subsequent statistical analysis was conducted on both pre-and post-PPLI results, with each attribute of PL being individually scrutinized. Recognizing the interconnected nature of statements within each attribute of PL, the researcher selected specific PPLI questions to

dissect the four attributes individually. For instance, questions 1, 2, 6, and 9 were utilized to gauge confidence, while questions 1, 4, 5, 7, 8, and 9 were employed to assess knowledge and understanding. Motivation was evaluated through questions 2, 3, 5, 7, and 8, whereas motor competence was analyzed based on students' responses to questions 1, 4, 5, 6, and 8. These data were subjected to analysis using SPSS (25).

### *Quantitative Data Analysis*

Descriptive statistics were computed using SPSS Statistics 25. Dependent samples t-tests were employed to compare the pre-and-post-PPLI surveys. To account for effect size, Hedges' correction was applied (VanHoudnos & Greenhouse, 2016). Internal consistency was assessed using Cronbach's Alpha, which indicated the reliability of the items based on participants' responses (George & Mallery, 2003). A paired-samples t-test was conducted to compare the mean scores of the four attributes of physical literacy (PL) — confidence, knowledge and understanding, motivation, and motor competence — between the pre-PPLI and post-PPLI surveys. The Bonferroni Correction was implemented beginning with a significance level of  $p \leq .05$ , and the adjusted alpha was calculated as  $\alpha_{new} = \alpha_{original} / n$ , as proposed by Simes (1986). Thus, when analyzing individual PL attributes, the p-value was corrected to less than .0125 to maintain a 95% confidence level ( $p < .0125$ ).

### *Qualitative Data Analysis*

Various data sources, including a researcher's journal, were utilized for data triangulation, as recommended by Rubin & Rubin (2012). Qualitative data analyses yielded insights into students' perspectives, experiences, and participation in the course within the specific setting. Multiple sources, such as transcripts from focus group and individual interviews, essay responses, and answers to the open-ended questions in the post-PPLI, enabled students to articulate their experiences and personal learning progress (PLP). The post-PPLI featured nine open-ended questions corresponding to the nine statements in the PPLI, prompting participants to provide detailed insights beyond mere Likert scale responses. The liaison conducted impartial interviews with both focus group and individual participants, contributing to the study's neutrality. Peer debriefing sessions between the liaison and researcher were conducted throughout the data collection process to mitigate researcher bias (Lincoln & Guba, 1985). Anonymous review and discussion of participants' responses, along with requests for clarification on course expectations and definitions of PL attributes, were also part of this process. Initial transcripts were reviewed by the liaison and shared with

interview participants for member checking (Patton, 2002). Following the completion of data collection, each document was thoroughly examined multiple times using the whole-part analysis method to grasp the central concepts before initiating the coding process. The researcher and liaison reviewed hard copies of interviews, essay responses, and open-ended post-PPLI answers to identify initial codes. Open and descriptive coding techniques were then applied, drawing several codes from the data. Interview transcripts and open-ended post-PPLI responses were coded, and document analysis was conducted to extract the key elements of students' narratives (Emerson et al., 2019). This iterative process aimed to achieve consensus in coding and agreement on responses. Subsequently, the data were reorganized using axial coding, resulting in the identification of five overarching themes (Dyson, 2020).

### 3. RESULTS

#### 3.1 Quantitative Results

The descriptive data displayed that the mean score on the pre-PPLI survey was 17.92 (SD = 6.317), whereas the mean score on the post-PPLI survey was 14.54 (SD = 4.612). A statistically significant difference result was found from pre- to post-PPLI ( $t = 3.058, p = .01$ ) based on the t-tests. Employing Hedges' correction, the adjusted effect size for the transition from pre to post-PPLI was 0.794 (Hedges'  $g = 0.794$ ; 95% CI [0.18, 1.38]), indicating a medium to large effect size. The internal consistency, as assessed by Cronbach's Alpha, was found to be high for both the pre ( $\alpha = .903$ ) and post ( $\alpha = .879$ ) surveys. An analysis of the individual attributes from the pre- and post-PPLI surveys revealed mixed results (see Table 1). While the results of the t-test analysis indicated a statistically significant difference in PPLI motivation scores from pre to post-test ( $t = 3.090, p = .009$ ), knowledge and understanding, as well as motor competence, did not demonstrate statistical significance but showed a trend towards lower scores. Hedges' Correction revealed medium to large effects for all measures. Overall, the internal consistency, as indicated by Cronbach's Alpha, ranged from good to excellent.

**Table 1**

*Pre- to Post-PPLI PL Attribute Comparisons*

Attribute	Pre-PPLI PL M ± SD	Post-PPLI PL M ± SD	<i>t</i>	<i>p</i>	<i>g</i>	<i>a</i>
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Confidence	8.23 ± 3.14	6.77 ± 2.09	2.456	.03	.638*	.863*
Knowledge and Understanding	12.77 ± 4.60	10.46 ± 3.10	2.871	.014	.745*	.909**
Motivation	9.54 ± 3.31	7.69 ± 2.29	3.090	.009*	.802**	.873*
Motor Competence	10.77 ± 4.23	9.15 ± 2.97	2.179	.019	.706*	.925**

Note. *df* = 12, *n* = 13, \**p* < .0125, Hedges' correction uses the sample standard deviation of the mean difference, plus a correction factor. \* medium *g* ≥ 0.5 to \*\*large *g* ≥ 0.8 effect. Cronbach's Alpha indicated internal consistency, \* good 0.9 > *a* ≥ 0.8, \*\* excellent *a* ≥ 0.9.

### 3.2 Qualitative Results

Five themes emerged from the individual and focus interview transcripts: (1) *I Feel Confident*, (2) *I Got Better Because I Was Helped*, (3) *I Am Motivated*, (4) *I Move Better*, and (5) *I Learned New Information*.

*I Feel Confident.* Students conveyed enhancements in their abilities, acknowledging a growing sense of confidence in their progress. One participant was shocked by the changes stating that: "(my) confidence has gone up more than I could have imagined a year ago." Similarly, another noted their confidence changed due to their motor competence: "My confidence in working out has heightened due to learning the correct form during exercises." Some students' confidence improved, and it helped their motivation, too. However, not every student experienced confidence at the same level; a participant wrote in their essay, "my confidence and physical competence improved slightly." Another participant wrote, "I feel confident in how I look and how much my little body could move or lift." Several students indicated a synergistic relationship between *feeling confident* and *increased motivation*.

*I Got Better Because I Was Helped.* A theme that emerged from the analysis was the role of the researcher's advice and encouragement in motivating students. At times, the researcher would offer guidance and encouragement to push students to lift heavier weights or try different exercises. The training requirements outlined in the PLIC (Physical Literacy Instructional Course) enabled students to achieve success while also introducing them to novel activities. One student encapsulated this sentiment in their essay by stating: "I would say the experience that I had in this class that was the most meaningful to me was when Mr. Wied was going and helping each and every one of us individually with the exercises that we needed help with, especially with the heavier weights, and just subtle tips that he was giving us to try and help us. I think that was really meaningful." Students realized their learning could transfer to future PA participation; one



student wrote, *“completing a set with ideal form in the school wellness center has allowed me to feel more comfortable performing exercises in my gym.”* Another wrote, with the *“help of the professor, I learned new exercises and techniques for future training programs.”* Students chose the required exercises out of categories for each training cycle and were encouraged to vary their choices. Students recognized benefits from their exercise choices. One student liked one of the most challenging movements during class stating, *“I would say the one I benefited from the most was the Turkish get up. It involves all planes of movement, and it’s a very simple exercise to do that doesn’t require any kind of weight or specific equipment.”* Lastly, many cues and encouragement were consistently given to the students during class; one interview participant shared, *“Being able to move as he says move well, but move often kind of thing gets in your head.”* Some participants recognized that their performance improved from participating in class.

*I Am Motivated.* One student summed it up with the statement, *“my motivation and confidence with myself to just flex and extend my body past my breaking point has been expanded because I have seen that I can push my body much more than that what I thought was conceivable.”* Some students noticed a change. It caused other wellness behaviors to emerge as demonstrated by this participant’s quote: *“my dedication and motivation have started to climb ever since the beginning of the semester so much that I am now changing the way I eat and my exercise habits.”* Progressed PL includes a lifetime commitment to physical activity (ASC, 2019b; Whitehead, 2010, 2013). One student said they plan to continue their PA habits after the class ended with this statement, *“my motivation has increased a lot from the start of the class. I now have the motivation to go out and live a life with more movement.”* Students recognizing the progress they achieved during class characterizes the PL journey.

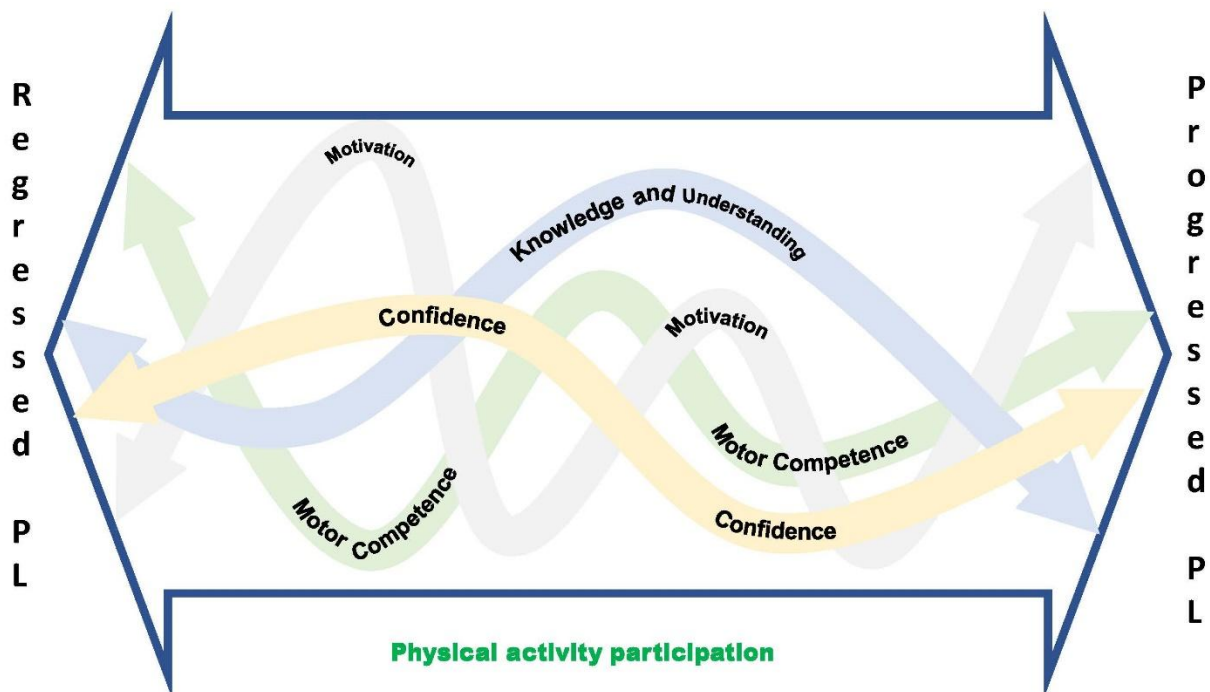
*I MOVE BETTER* was another theme addressed by the second research question. The training expectations during the laboratory session specifically included increasing the students’ ability to move. One student said, *“I like all the required exercises because I feel like they’re all crucial to our routine and really good.”* Many students affirmed positive changes to their movement ability. Throughout the class, students were reminded to consider how they moved at the start of the class compared to several times during the class. Students described the interrelated nature of PL in their comments. The interrelated nature of the physical literacy components is illustrated in Figure 1. One participant noted, *“motor competence, I would say with my form and balance I feel a lot more, and it definitely has improved a lot so that they increased my confidence and motivation.”* Students said, *“I feel that I can move better, which makes me feel more*

confident." Another student said, "I felt like I had really learned a lot from this class and like I actually took something beneficial and meaningful away."

*I Learned New Information.* Students indicated that they gleaned valuable insights from both the lecture and laboratory components of the class. They acquired knowledge about monitoring their health and wellness, understanding the correlation between physical activity and improved health, and strategizing for future wellness decisions. One student shared during an interview, "I felt like I had really learned a lot from this class and like I took something beneficial away." Another student said (my) "knowledge and understanding improved significantly." One of the PLIC goals is to connect knowledge, activity, and future consequences of a wellness lifestyle. Another student wrote, "I feel like I learned a lot about how important physical activity is, and I want to make that a part of my daily life—every day. I also feel like this class just benefited me in more ways than one. From everything that I learned in the course, I can evaluate my health and wellness change."

**Figure 1**

*The Interrelated Nature of the Physical Literacy Components*



*Note.* The physical literacy components interact to progress or regress an individual's physical literacy.

## 4. DISCUSSION

Physical literacy is advocated globally to enhance participation in physical activity (Holler et al., 2019). The positive change from pre- to post-test scores indicates progression in students' perceptions of their physical literacy progress (PLP). The PLIC had a positive impact on the majority of students' PLP. Individual analysis of the four PL attributes yielded mixed outcomes. While the PLIC effectively heightened students' motivation, it had a comparatively lesser impact on altering participants' perceptions of knowledge and understanding, as well as motor competence. These findings are consistent with Holler et al.'s (2019) research, which supports the notion of changes in PLP following focused instruction and regular participation in exercise.

The students who engaged in physical exercise recognize the interconnectedness of the attributes of PL (IPLA, 2019; Whitehead, 2013). The laboratory sessions of the course, focused on PL, were meticulously crafted to enhance student achievement and foster the development of PL skills (Rudd, Pesce, et al., 2020; Stodden et al., 2009). At the outset of the class, students were introduced to and practiced a "loaded carry" exercise, ensuring proper upper body posture and completing one daily. Reflecting on their preferred exercise choice, one participant from the focus group mentioned the "loaded carries," noting how encouragement to increase weight helped them feel stronger. Participation in the course contributed to an advancement in students' perception of their PL, aligning with the educational objectives of PL (ASC, 2019b; Whitehead, 2010; Whitehead et al., 2018).

Students acquired new exercises that, with consistent practice and encouragement for improvement, enabled them to recognize positive changes, a pivotal aspect for lifelong participation in physical activity (Rudd, Pesce, et al., 2020; Stodden et al., 2009; Stodden et al., 2013). Participants with a background in movement may have found certain exercises less challenging than others. This echoes the previous research (Stodden et al., 2009; Stodden et al., 2013). Several students acknowledged enhanced movement capabilities resulting from daily movement preparation, such as hurdle walkovers and bear crawls, which extended beyond class sessions. Many attested to positive changes in their movement ability, aligning with the goals of PL (ASC, 2019b; Whitehead, 2010; Whitehead et al., 2018). This research provides evidence of improved motor competence among students, a desired outcome of PL (Robinson et al., 2015; Rudd, Crotti, et al., 2020; Rudd, Pesce, et al., 2020).

In this study, many students reported that enhanced motor competence bolstered their confidence, thereby increasing their motivation to engage in physical activity. Carcarmo-Oyarzun et al. (2023) found that students' motor competence regressed during the pandemic, the opposite of this study participants' experience. While the majority of responses were positive, not all students experienced an increase in confidence. Some students reported no change in confidence levels, underscoring the complexity of motivation in physical activity participation (Romero-Blanco et al., 2020). Intrinsic motivation, associated with enjoyment and performance, emerged as a driving force behind increased participation in physical activity (Edwards et al., 2017; Rudd, Pesce, et al., 2020). One student expressed, "My motivation and confidence have grown as I've realized that I'm making more progress than I thought possible, spurring me to push harder to continue improving."

The study's findings are subject to several limitations. Firstly, the small sample size ( $n = 13$ ) and the use of the PPLI limits the generalizability of the results, as these factors can impact the reliability and validity of the findings (Ma et al., 2020; Sum et al., 2018). Additionally, the reliance on course assignments for data collection could introduce bias, as students may have been inclined to provide positive responses to avoid receiving lower grades. Furthermore, the specific PLIC and movement philosophy employed by the researcher teaching the course may not be universally applicable, potentially limiting the broader adoption of the study's methods and findings (Lincoln & Guba, 1985; Miles et al., 2014). Despite these limitations, the research contributes to the call for the development of practical skills and knowledge regarding the integration of PL into educational practice (Lundvall, 2015). This highlights a strength of the study, as it advocates for implementing strategies to incorporate PL principles into educational settings.

## **5. CONCLUSIONS**

The current findings suggest that the implementation of a Physical Literacy Instructional Course within a wellness and activity curriculum holds promise in reshaping students' perspectives on PL. This shift in perception could potentially enhance their engagement in physical activity and yield positive outcomes for their overall well-being. Students reported improved perceptions of PL, particularly motivation. Given that a PLIC within a college wellness and activity course may represent a pivotal exposure to the concept of PL for adults, further research is warranted to determine which course designs yield the most significant and enduring changes in students' perceptions of PL and their subsequent engagement in physical activity.

## 6. ACKNOWLEDGEMENTS

### 6.1 Disclosure of Funding Sources

None.

### 6.2 Conflict of Interest (de-identify in blinded manuscript)

The authors declare no conflicts of interest.

### 6.3 Contribution of Authors (exclude in blinded manuscript)

DEW: study design, data collection, data analysis, manuscript preparation, manuscript editing

PZ: manuscript preparation, manuscript editing

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