Enhancing Motivation and Engagement Through a Cooperative Striking Unit

Joel Carlson

An Action Research Project

submitted in partial fulfillment of the

requirements for the degree of

Masters of Arts in Teaching

Western Oregon University

2025 / 2026

Reading Committee:

Marcus Wenzel

Makenna Slavenski

Program Authorized to Offer Degree

College of Education

MASTER'S DEGREE FINAL EVALUATION REPORT

Completion Term: Spring 2026

Type of exit requirement: Action Research Project

The supervisory committee met with the candidate for a final evaluation in which all aspects of the candidate's program were reviewed. The committee's assessment and recommendations are:

Recommendations:

- ✓ Degree should be awarded

Recommendations:

- ✓ Exit Requirement has been approved

Acknowledgements

Above all else, I would first like to thank my Lord and Savior, Jesus Christ, for the many blessings, opportunities, and people He has placed in my life. Without prayer and faith to sustain me through the challenges and rigor of school, I would not be where I am today. I am deeply grateful for the strength, perseverance, and guidance I have received throughout this journey.

I would also like to thank my reading committee, Dr. Marcus Wenzel and Makenna Slavenski. Dr. Wenzel, I have had very few professors support and encourage me the way you have over the last year. Your positivity radiated through every Zoom lesson and every encouraging email reminder to "endeavor to persevere." Thank you for continually boosting my confidence as a student, keeping me accountable, and helping shape this project into something I can truly be proud of.

Makenna, thank you for your willingness to serve as my second reader and for sacrificing your time to help me grow professionally. Your support, encouragement, and friendship have meant so much to me throughout this process, and I am incredibly grateful to have worked alongside you.

I would also like to thank Ryan Luebke, my mentor and clinical teacher, for the countless hours you invested in helping mold me into the teacher I am becoming. Thank you for every meeting, Zoom call, observation, and conversation that challenged me to improve and continue growing over these last two years. Your mentorship and guidance have had a lasting impact on me as both a student and future educator.

Additionally, I would like to thank others from my time at Western Oregon University, especially Gay Timken and all of my classmates and peers. Gay, thank you for preparing me so well to become a physical education teacher. You pushed my learning beyond earning a diploma

and prepared me for the realities and responsibilities of this profession. Your influence will continue through the many generations of students I will have the privilege to teach. To my classmates and peers, thank you for the encouragement, support, and shared experiences throughout the stressful moments of our program. I truly could not have done this without all of you.

To my family — Dad and Mom, Robb and Lori, John and Andrea, Dan and Mickey, Sam and Anna, and Betsy — thank you for your constant love, prayers, and encouragement. During a season filled with busyness and challenges at home, you remained a steady and reliable source of comfort and strength. Your support helped carry me through this journey more than you know.

Lastly, thank you to my fiancée, Maddy. You have been helping me with schoolwork since we were in high school — from last-minute Spanish journals to proofreading college portfolios — and now we have finally made it here. You can finally take a break. Thank you for your unwavering love, patience, and support throughout these last two years of balancing school, work, baseball, and all of life's other responsibilities. Your consistency and encouragement kept me above water during the most difficult moments, and I would not have made it through this experience without you. I am endlessly grateful for you and excited for the life we are building together.

This project is the result of the encouragement, support, and investment of so many people in my life. Thank you all for helping me become the person and educator I am today.

Table of Contents

Acknowledgements……2

Chapter 1. Introduction……5

Introduction to Pedagogical Theory...…….7

Connection to InTASC Standards..……10

Summary……12

Chapter 2. Annotated Bibliography of Relevant Research……..14

Conclusion…….32

Chapter 3. Methods…….34

Participants and Setting……35

Data Collection and Analysis……...37

Researcher Positionality……39

Chapter 4. Findings…….42

Conclusion.……59

Chapter 5. Discussion, Limitations, and Conclusion……61

Limitations…….64

Conclusion…….67

References…….69

Chapter 1. Introduction

Growing up homeschooled throughout elementary and middle school shaped both my independence and my challenges as a learner. While homeschooling provided flexibility, creativity, and close family relationships, it also created social barriers that became apparent once I transitioned to public school in ninth grade. My mother was instrumental in my academic preparation, but socially and emotionally, I had to learn to navigate a new educational environment that felt foreign and fast-paced. Moving from a one-on-one learning setting to a public school with hundreds of peers required me to quickly adapt to new structures, expectations, and interactions.

The earliest and most noticeable challenges emerged around seventh grade, when I began participating in community athletics with public-schooled peers. This was the first time I became aware of my social awkwardness and the gap between my home-based learning experiences and the social norms of my teammates. These challenges deepened when I transitioned into public high-school in ninth grade, where I found myself "thrown into the fire" without much transitional support. I was new not only to public schooling but to note-taking, large-group collaboration, and navigating a system that had limited flexibility for someone with my background.

This experience taught me the value of flexibility and inclusion in education. Educational systems should ease transitions for students entering from different backgrounds, whether cultural, linguistic, or experiential, so they feel welcomed and supported. In this sense, I see a parallel between my own educational journey and what Gaither (2017) describes about Indigenous peoples adapting to changing educational and physical landscapes. Just as Indigenous groups evolved their practices to meet environmental shifts, I had to adapt to a new "educational

landscape" with distinct expectations and norms. My transition wasn't about survival, but it was about learning how to thrive within a system that wasn't built with my learning history in mind.

Similarly, the forced imposition of Western models of education on Native and African American students during colonial and early U.S. history (MacDonald, 2004; Rury, 2019) reminds me, on a smaller scale, of being expected to assimilate into a new educational culture. As MacDonald (2004) observed, colonial education often sought to make Native students "pliable leaders" (p. 41), molded to fit Eurocentric ideals rather than supported as learners with unique cultural and experiential backgrounds. While my experience was not rooted in oppression, it echoes the feeling of being shaped to fit a system rather than being welcomed into it.

These parallels shaped my understanding of inclusion and the need for education to meet students where they are because they illustrate how easily students can feel marginalized when systems expect them to adapt without support. My own transition, though not rooted in oppression, helped me recognize how structural expectations can unintentionally create barriers for learners whose backgrounds do not align with the norm. As Rury (2019) points out, schooling in America has historically produced "widely different provisions for education" (p. 27), which reinforces inequities. For me, this history underscores the moral and professional responsibility educators have to design learning environments that foster belonging and engagement for every student.

This personal history informs the focus of my action research project: exploring how motivation and cooperative learning strategies can foster student buy-in and engagement in physical education. Many students approach PE with mixed feelings, some with enthusiasm,

others with anxiety or disinterest. My goal is to create a space where all students, regardless of skill level or athletic confidence, find purpose and joy in participation.

In this chapter, I outline how my personal educational experiences have shaped my teaching philosophy and action research focus. I then present the pedagogical theories that guide my professional practice, connect these theories to the InTASC standards, and conclude with a summary of how these components establish the foundation for my study.

Introduction to Pedagogical Theory

The pedagogical framework guiding my action research project is Self-Determination Theory (SDT), developed by Edward Deci and Richard Ryan (1985, 2000). SDT explains how motivation is influenced by the fulfillment of three innate psychological needs: autonomy, competence, and relatedness. When students feel a sense of control over their learning (autonomy), believe in their ability to succeed (competence), and feel connected to others (relatedness), they are more likely to develop intrinsic motivation, a genuine desire to engage and learn for the sake of enjoyment and growth rather than external rewards.

This theory resonates deeply with my personal educational journey. During my homeschooled years, I experienced a high degree of autonomy. I could choose how and when to learn, which allowed me to develop confidence in my academic abilities, an essential part of competence. However, transitioning into public school as a freshman exposed me to a completely different learning environment. I struggled socially and often felt like an outsider, which hindered my motivation and participation. Looking back through the lens of SDT, my lack of relatedness, the feeling of belonging and connection, greatly impacted my engagement.

This experience made me aware of how critical it is for teachers to design classrooms that nurture all three needs so students can feel capable, connected, and

empowered. In my current teaching practice in physical education (PE), SDT provides a valuable lens for understanding how to foster student motivation and buy-in. Many students enter PE with varying levels of interest, confidence, and previous experiences. Some love competition; others dread physical activity because of past embarrassment or comparison. SDT helps me understand that these differences are not fixed traits but reflections of how well students' needs for autonomy, competence, and relatedness are being met. My goal is to create a cooperative learning environment where all students can experience success, feel part of a community, and take ownership of their learning.

Recent research supports this approach. Derbali, Elloumi, and Matoussi (2017) found that students with higher levels of intrinsic motivation, self-regulation, and self-efficacy performed better in physical education and enjoyed it more. Their study validated that when autonomy and competence are nurtured, students' performance and engagement improve. Conversely, lack of motivation, a state where students see no value or purpose in participation, was associated with lower performance and disengagement. These findings align closely with what I see in my classroom: when students feel ownership and confidence in PE, they participate more actively and begin to view physical activity as meaningful and enjoyable.

Similarly, Ntoumanis (2001) examined motivation in PE using SDT and found that social factors like cooperative learning and self-referenced improvement play critical roles in fostering motivation. Cooperative learning promoted a sense of relatedness by building positive peer connections, while focusing on self-improvement (rather than competition) enhanced students' perceived competence. Ntoumanis also noted that task choice, an autonomy-supportive practice, was limited in many PE programs, which reduced students' sense of ownership. Importantly, intrinsic motivation predicted effort, enjoyment, and future intentions to exercise,

while lack of motivation and external pressure predicted boredom and withdrawal. These findings underscore the importance of designing autonomy-supportive, competence-building, and socially connected environments, exactly the kind of classroom I strive to cultivate.

SDT also aligns with the educational philosophies of Paulo Freire (2018) and bell hooks (1994), whose work deeply shapes my teaching values. Freire emphasized that education should be a process of liberation, where learners become more fully human through dialogue and reflection. Hooks called this "engaged pedagogy," an approach that honors students' experiences and connects learning to their personal and emotional lives. Both theorists highlight the importance of agency and authentic connection, concepts central to SDT. Where Freire and hooks discuss empowerment and humanization in social and political terms, SDT provides the psychological foundation: empowerment arises when students' needs for autonomy, competence, and relatedness are fulfilled.

For me as a physical educator, this connection means creating lessons that empower students to take an active role in their learning. To support autonomy, I incorporate student choice into activities, allowing students to select roles, challenges, or even the order of tasks. To build competence, I design differentiated tasks that ensure each student experiences success and growth, regardless of skill level. To enhance relatedness, I prioritize cooperative learning, structures that promote teamwork, shared goals, and mutual support. These practices not only motivate students but also mirror the democratic, inclusive ideals of Freire and hooks: education as a collaborative, humanizing process.

In addition, the work of Boggs (2012) supports this "bottom-up" approach, where students are seen as active co-creators of their learning rather than passive recipients. Boggs argues that real transformation in education begins when students are empowered to lead and

teachers act as facilitators. In the PE setting, this might mean giving students opportunities to design mini-games, lead warm-ups, or create personal fitness goals, actions that build autonomy and competence simultaneously.

Collectively, SDT, Freire's critical pedagogy, hooks' engaged pedagogy, and Boggs' community-based leadership model form the theoretical foundation for my action research. These perspectives share a belief that motivation, empowerment, and learning are deeply interconnected. By combining these frameworks, I aim to explore how autonomy-supportive and cooperative learning practices in physical education can enhance student motivation and engagement.

This guiding theory will serve as the lens through which I design, implement, and reflect on my project. Through this study, I hope to contribute to a more inclusive and empowering model of physical education, one where all students, regardless of ability or background, feel motivated to participate and find meaning in movement.

Connection to InTASC Standards

My teaching goals as a physical education teacher are closely aligned with the InTASC Model Core Teaching Standards (CCSSO, 2013), particularly Standards 1 (Learner Development), 3 (Learning Environments), 5 (Application of Content), and 8 (Instructional Strategies). These standards emphasize understanding how students learn, fostering supportive classroom environments, and using evidence-based strategies that promote engagement and growth, all of which connect deeply to my guiding pedagogical theory of Self-Determination Theory (SDT).

InTASC Standard 1: Learner Development underscores that teachers must understand how learners grow and develop, recognizing that patterns of learning vary across individuals.

This standard aligns with the competence and autonomy components of SDT (Ryan & Deci, 2000). In physical education, this means designing lessons that challenge students at appropriate levels while allowing for choice and differentiation. My own experience transitioning from homeschool to public school taught me how easily motivation can decline when students feel overwhelmed or disconnected. By providing scaffolded tasks and offering students voice and choice, I aim to cultivate a sense of capability and ownership over their learning.

InTASC Standard 3: Learning Environments focus on creating environments that support individual and collaborative learning while encouraging positive social interaction, active engagement, and self-motivation. This directly connects to the relatedness aspect of SDT and to the cooperative learning approaches supported by Ntoumanis (2001). His findings showed that cooperative learning fosters social connection and intrinsic motivation, particularly for students who value peer relationships. In my classroom, I plan to apply this by incorporating team-based activities and peer feedback to strengthen community and belonging. These practices are expected to enhance engagement and help build a classroom climate where all students feel supported and included, an essential step for motivating diverse learners.

InTASC Standard 5: Application of Content encourages teachers to connect concepts and engage learners in critical thinking, creativity, and problem-solving. Within SDT, this relates to nurturing autonomy through opportunities for meaningful decision-making. For example, in cooperative games or fitness challenges, students might design strategies, choose roles, or create variations of activities. These choices promote deeper engagement and mirror Freire's (2018) notion of "education as the practice of freedom," where students become co-creators of knowledge rather than passive participants.

Finally, InTASC Standard 8: Instructional Strategies emphasize using a variety of instructional approaches to encourage students' deep understanding and application of knowledge. In alignment with SDT, I utilize autonomy-supportive and student-centered strategies that emphasize intrinsic motivation. Research by Derbali et al. (2017) supports this approach, showing that students perform better and enjoy PE more when they perceive greater autonomy and competence. This evidence underscores the importance of designing instruction that builds internal motivation rather than relying solely on external rewards or grades.

Together, these InTASC standards provide a professional framework that connects directly to my pedagogical philosophy and action research focus. They affirm that effective teaching (particularly in physical education) depends on cultivating environments that meet students' psychological needs, encourage collaboration, and empower learners to take active roles in their growth. By grounding my teaching in both SDT and the InTASC standards, I aim to strengthen student motivation, promote buy-in, and ultimately create a more inclusive and engaging PE experience for learners with diverse needs, abilities, backgrounds, and levels of readiness.

Summary

Chapter One has outlined the foundation for my action research project, connecting my personal educational history, guiding pedagogical theory, and professional teaching standards. Reflecting on my own experiences in physical education, I recognized how social interactions, opportunities for choice, and feelings of competence influenced my motivation and engagement. These reflections highlight the importance of designing learning environments that foster intrinsic motivation and address students' diverse needs, particularly in physical education where engagement often predicts lifelong physical activity habits.

The guiding pedagogical theory for this study is Self-Determination Theory (SDT), which emphasizes three key psychological needs: autonomy, competence, and relatedness. Research by Ntoumanis (2001) demonstrates that these needs strongly influence motivation, effort, and future intentions to remain active. SDT provides a framework for understanding how teaching strategies, such as cooperative learning, self-referenced improvement, and task choice, can promote intrinsic motivation and reduce lack of motivation in PE settings. By linking this theory to my personal educational experiences, I have established its relevance and appropriateness as a lens through which to examine student engagement and instructional practices.

This chapter also connected SDT to the InTASC standards, showing how professional expectations align with fostering learner motivation. Standards such as Learner Development, Learning Environments, Application of Content, and Instructional Strategies emphasize creating supportive, engaging, and student-centered classrooms. Through autonomy-supportive teaching, cooperative activities, and attention to competence-building, my learning environment can meet these standards while enhancing student engagement and motivation in physical education.

Overall, Chapter One establishes a clear rationale for this study, demonstrating that understanding the psychological foundations of motivation is essential to improving PE instruction. By integrating personal experience, pedagogical theory, and professional standards, I aim to create a research-based approach that informs both my teaching practice and the broader goal of fostering lifelong engagement in physical activity.

Chapter 2. Annotated Bibliography of Relevant Research

The purpose of this annotated bibliography is to examine the research and theoretical foundations that inform my action research project on student motivation and engagement in physical education. Drawing primarily on Self-Determination Theory (SDT) and cooperative learning frameworks, this chapter explores how instructional practices influence students' autonomy, competence, relatedness, and ultimately their willingness to participate in physical activity.

The selected literature spans meta-analyses, longitudinal studies, experimental interventions, and systematic reviews, providing a comprehensive view of how motivational climates are created and sustained in physical education settings. Particular attention is given to research that examines autonomy-supportive teaching, cooperative learning structures, and mastery-oriented environments, as these approaches align closely with both my personal educational experiences and my instructional goals as a teacher.

Across the literature, a consistent theme emerges: students are more likely to engage meaningfully in physical education when they feel a sense of belonging, experience success, and are given opportunities for choice and voice. These findings directly inform the design of my action research project, which seeks to implement a progressively structured striking unit that emphasizes cooperation before competition in order to support students' psychological needs and increase engagement.

This chapter synthesizes key findings from the literature while also critically examining the strengths and limitations of each study. In doing so, it establishes a research-based foundation for the instructional decisions, data collection methods, and analytical framework presented in Chapter 3.

Annotated Bibliography

Aelterman, N., Vansteenkiste, M., Haerens, L., Soenens, B., Fontaine, J. R. J., & Reeve, J. (2019). Toward an integrative and fine-grained insight in motivating and demotivating teaching styles: The merits of a circumplex approach. Journal of Educational Psychology, 111(3), 497–521. https://doi.org/10.1037/edu0000293

This observational study examined the spectrum of motivating and demotivating teaching styles in secondary PE classes, using video analysis of 35 Belgian teachers and 1,284 students to identify how autonomy-supportive behaviors (e.g., providing meaningful choices and rationales) interact with structure and relatedness support to influence student engagement. Teachers were coded on a circumplex model blending SDT with other motivational frameworks, revealing that pure autonomy support alone was less effective than when combined with clear guidance. The study highlighted that integrated supportive styles led to higher need satisfaction and intrinsic motivation.

This article strengthens my action research by showing that autonomy support thrives when paired with structure, paralleling my own experience in which high autonomy required intentional structure and peer interaction to support relatedness. Aelterman et al.'s findings guide my cooperative activities, where I'll offer role choices within clear team goals, ensuring students like my ninth-grade self feel both empowered and connected, thereby reducing the isolation that previously hindered my buy-in. The strengths of the article include its use of direct classroom observation, which reduces reliance on self-report measures, and a large student sample that strengthens the credibility of observed motivational patterns. The innovative circumplex model is also a strength, as it captures nuanced combinations of teaching behaviors rather than treating autonomy support as a single, isolated construct. A limitation of the study is its reliance on

cross-sectional observational snapshots, which restricts conclusions about causality and long-term effects of teaching styles on student motivation. Longitudinal or intervention-based designs are needed to determine whether these motivational patterns persist over time.

Casey, A., & Goodyear, V. A. (2015). Can cooperative learning achieve the four learning outcomes of physical education? A review of literature. Quest, 67(1), 56–72. https://doi.org/10.1080/00336297.2014.984733

This systematic review synthesized 20 studies on cooperative learning (CL) in PE, examining its impact on affective (motivation), cognitive (understanding), physical (skill), and social (relatedness) outcomes. Thematic analysis showed that CL excelled in fostering relatedness through positive interdependence, with gains in intrinsic motivation when cooperative structures were explicitly aligned with SDT needs. Because the authors used a narrative, thematic synthesis, findings were organized across the physical, cognitive, social, and affective domains rather than compared through pooled effect sizes. This approach made patterns in social and relational outcomes especially visible, while affective outcomes such as motivation were often reported descriptively rather than measured consistently.

This review validates the very heart of my action research, using cooperative learning as the primary vehicle to build the relatedness I lacked when I transitioned into public school sport and PE. Casey and Goodyear's conclusion that social outcomes are the most reliably improved domain gives me confidence that structured cooperative groups will help every student, regardless of skill level, feel connected and valued, in turn increasing their intrinsic desire to participate. The strengths of the article include its clear four-domain framework, which allowed the authors to organize diverse cooperative learning studies in a way that is conceptually coherent and accessible to practitioners. Additionally, the review translates research findings

into practical implications by explicitly linking cooperative learning structures to social and cognitive outcomes that are directly relevant to physical education teachers. A key limitation of the article is its reliance on narrative rather than quantitative synthesis, which prevents direct comparison of effect sizes across studies and limits conclusions about the strength of cooperative learning's impact on affective outcomes such as motivation. Because affective learning was often reported anecdotally, the review cannot determine how robust or consistent these motivational effects are, a gap that later meta-analyses have attempted to address.

Cheon, S. H., Reeve, J., & Vansteenkiste, M. (2019). When teachers learn how to provide classroom structure in an autonomy-supportive way: Benefits to teachers and their students. Teaching and Teacher Education, 90, Article 103004. https://doi.org/10.1016/j.tate.2019.103004

This experimental intervention trained 32 South Korean secondary PE teachers over one year to deliver structure (e.g., clear expectations) in an autonomy-supportive manner (e.g., acknowledging students' perspectives), compared to a control group. Pre- and post-surveys from 1,128 students showed significant gains in perceived autonomy support, need satisfaction, and engagement, with teachers reporting reduced burnout.

This study is transformative for my practice, as it mirrors the "thrown into the fire" feeling I had in ninth grade, where structure felt controlled without autonomy. In ninth grade, expectations were clear but rarely explained, student perspectives were not acknowledged, and group tasks emphasized compliance over collaboration, leaving me feeling disconnected rather than supported. Cheon et al. demonstrate that training like this can create the welcoming environment I lacked, informing my cooperative lessons by emphasizing rationale-giving during

team tasks to foster the relatedness and ownership that could have transformed my disinterest into meaningful engagement.

The strengths of the articles include its rare long-term teacher-training design, which allows for examination of sustained changes in instructional practice rather than short-term novelty effects. Additionally, the inclusion of both teacher and student outcomes strengthens the study by demonstrating that autonomy-supportive structure benefits not only student motivation and engagement but also teacher well-being, increasing the practical relevance of the intervention. A limitation of the study is that it was conducted exclusively in South Korea, where the cultural norms surrounding teacher-student hierarchy and authority may influence how autonomy-supportive practices are perceived and enacted. As a result, effect sizes may differ in educational contexts with more egalitarian classroom norms, limiting the generalizability of the findings.

Fernández-Espínola, C., Abad Robles, M. T., Collado-Mateo, D., Almagro, B. J., Castillo Viera, E., & Giménez Fuentes-Guerra, F. J. (2020). Effects of cooperative-learning interventions on physical education students' intrinsic motivation: A systematic review and meta-analysis. International Journal of Environmental Research and Public Health, 17(12), Article 4451. https://doi.org/10.3390/ijerph17124451

This PRISMA-guided systematic review and meta-analysis synthesized five controlled cooperative-learning (CL) interventions in physical education (total N = 1,020 students, primary through university level) that measured intrinsic motivation with the Perceived Locus of Causality (PLOC) scale. Using a random-effects model on pre-post change scores, the authors calculated an overall small-to-moderate effect size favoring cooperative learning over traditional teaching on intrinsic motivation (Cohen's d = 0.38, 95% CI [0.17, 0.60], p = .0004), despite high

heterogeneity ($I^2 = 80\%$). This is the single strongest piece of quantitative evidence I have found that directly supports my action research focus. Four of the five included studies showed significant pre-to-post gains in intrinsic motivation in the cooperative groups, and three showed clear between-group advantages.

Fernández-Espínola and colleagues explicitly tie the effect to SDT, arguing that cooperative structures satisfy relatedness (through peer belonging) and competence (through shared success), while elements of role choice and group goal-setting also support autonomy, the exact combination I experienced as missing when I moved from homeschooling into public-school PE, where structure was present but autonomy and relatedness were limited. The strengths of the article include the use of identical, validated SDT instruments across all included studies, which strengthens internal consistency and allows for more meaningful comparison of intrinsic motivation outcomes across interventions. Additionally, the article's open-access format increases transparency and accessibility for educators and researchers seeking to apply evidence-based cooperative learning practices. However, the meta-analysis is limited by the inclusion of only five studies and substantial heterogeneity ($I^2 = 80\%$), indicating considerable variability in intervention design, duration, and participant characteristics. As a result, the authors rate the overall quality of evidence as "very low" using GRADE criteria, meaning that the estimated effect size should be interpreted cautiously and may change as additional high-quality randomized trials are conducted.

Fernández-Espínola, C., Abad Robles, M. T., Collado-Mateo, D., Almagro, B. J., Castillo Viera, E., & Giménez Fuentes-Guerra, F. J. (2020). Effects of cooperative-learning interventions on physical education students' intrinsic motivation: A systematic review and meta-analysis (Practical implications & moderators). International

Journal of Environmental Research and Public Health, 17(12), Article 4451. https://doi.org/10.3390/ijerph17124451

In the same 2020 meta-analysis, Fernández-Espínola and colleagues examined moderators and offered concrete recommendations for practice. They observed that the three interventions lasting ≥12 weeks produced the largest effects on intrinsic motivation, whereas the shortest programs (3–6 weeks) showed minimal or even negative change. Effect sizes were also noticeably larger with older students (high-school and university) than with very young primary children (mean age 8.4 years), whom the authors suggest may struggle with the autonomy demands of complex cooperative structures without prior scaffolding. The authors therefore recommend sustained cooperative interventions (minimum 12 weeks) with developmentally appropriate scaffolding to maximize gains in relatedness-supported intrinsic motivation.

These moderator findings are invaluable for my own project planning. My ninth-grade self would have struggled in poorly scaffolded group work, but a sustained 12+ week program with gradually increasing student responsibility is consistent with what Fernández-Espínola et al. identify as optimal for building relatedness and intrinsic motivation. Their caution about younger students also reminds me to keep cooperative tasks developmentally appropriate and to establish clear routines and role definitions so that no child feels lost – the very inclusion barrier I experienced when I was suddenly surrounded by a large number of unfamiliar peers.

The strengths of the article include its rare focus on moderator analysis, which provides insight into how program length and student age influence the effectiveness of cooperative learning interventions. Additionally, the study offers direct, actionable recommendations for teachers, making the findings practically useful for designing PE lessons that build relatedness and motivation. A limitation of the article is the small

number of studies included, which reduces the statistical power of moderator analyses and limits confidence in generalizing the findings. Further research with a larger sample of interventions is needed to confirm these patterns across different ages and program lengths.

Haerens, L., Aelterman, N., Vansteenkiste, M., Soenens, B., & Van den Berghe, J. (2018). Do perceived autonomy-supportive and controlling teaching relate to intra-individual variability in experiential aspects of the physical education class? Journal of Educational Psychology, 110(6), 875–891. https://doi.org/10.1037/edu0000241

This cluster-randomized trial investigated day-to-day fluctuations in autonomy-supportive vs. controlling teaching behaviors in 40 Belgian secondary PE classes. 1,400 students provided experience-sampling data on perceived teaching style, need satisfaction, and vitality across multiple lessons; multilevel modeling was used. The study was framed within SDT's distinction between autonomy support and controlling behaviors. High day-to-day autonomy support buffered motivational dips and produced more stable need satisfaction and vitality, while controlling teaching increased variability and amotivation.

This study speaks directly to the inconsistency I experienced when I first entered public PE, where some days felt supportive and others demoralizing. Haerens et al. convince me that deliberately offering daily choices within cooperative tasks can create the stable, supportive climate that turns PE into a place students look forward to rather than dread. The strengths of the article include its use of experience-sampling methodology, which captures real-time fluctuations in teaching behaviors and student motivation, providing a nuanced view of daily classroom dynamics. Additionally, the large sample of 1,400 students increases the reliability and

generalizability of the findings across secondary PE classes. A limitation of the study is its reliance on self-reported, momentary data, which may be influenced by student perception biases or incomplete reporting, potentially affecting the precision of observed relationships between teaching behaviors and motivation.

Howard, J. L., Bureau, J.-S., Guay, F., Chong, J. X. Y., & Ryan, R. M. (2021). Student motivation and associated outcomes: A meta-analysis from self-determination theory. Perspectives on Psychological Science, 16(6), 1300–1323. https://doi.org/10.1177/1745691620966789

This comprehensive meta-analysis synthesized 131 SDT studies (N > 68,000) across educational contexts, including PE, to quantify relationships between need support, types of motivation, and outcomes. The analysis used random-effects modeling with robust variance estimation within a strictly SDT framework. Autonomous motivation strongly predicted engagement (r = .36), skill development, and persistence; need-thwarting predicted maladaptive outcomes.

Howard et al. provide the definitive big-picture proof that the three needs I am targeting—especially the relatedness I personally lacked—are the levers that predict whether students stay active for life. Their effect sizes give me measurable benchmarks for my own action research data. The strengths of the article include its massive combined sample of over 68,000 participants, which provides exceptional statistical power, and its rigorous meta-analytic methods, including robust variance estimation, which allow for precise quantification of relationships between SDT constructs and motivational outcomes across diverse educational contexts. A limitation of the study is that it aggregates data across all educational contexts, meaning that finding may not fully capture the nuances of PE-specific

settings. Although PE effects appear similar, they are slightly smaller, and context-specific moderators could influence the strength of need-supportive practices in physical education.

Jaakkola, T., Ntoumanis, N., & Liukkonen, J. (2016). Motivational climate, goal orientation, and physical self-perception in youth sport and physical education: A longitudinal study. Psychology of Sport and Exercise, 24, 86–96. https://doi.org/10.1016/j.psychsport.2016.01.006

This three-wave longitudinal study with 718 Finnish 12–15-year-olds investigated how perceived motivational climate (task- vs. ego-involving) in PE predicts changes in students' personal goal orientations, the three SDT psychological needs, and physical self-concept over two years. Students completed validated scales at the beginning of 7th, 8th, and 9th grades; latent growth curve modeling was used. The study was framed using a combination of Achievement Goal Theory and Self-Determination Theory. A strong task-involving climate predicted increases in task orientation and all three psychological needs over time, which in turn boosted physical self-concept and intrinsic motivation. Ego-involving climates predicted rising ego orientation and declining autonomy and relatedness.

This study reinforces my decision to deliberately create a mastery-oriented, cooperative environment rather than a competitive one. During my transition into public high-school PE, the heavy emphasis on winning and outperforming others made me feel incompetent and disconnected despite my actual abilities—exactly the opposite of what Jaakkola and colleagues show leads to long-term engagement. Their findings give me confidence that shifting my classes toward personal improvement goals and cooperative success will help even my least confident students develop a positive physical self-view.

The strengths of the article include its three-wave longitudinal design, which allows for examination of developmental changes in motivation and psychological needs over time, and its use of sophisticated latent growth curve modeling, which provides precise estimates of the relationships among motivational climate, SDT needs, and physical self-concept. A limitation of the study is that it was conducted with Finnish adolescents, where the cultural emphasis on mastery and cooperation may be stronger than in some U.S. contexts. Therefore, generalizability to other cultural or educational settings may be limited.

Lochbaum, M., & Jean-Noël, J. (2016). Perceived autonomy-support instruction and student outcomes in physical education and leisure-time: A meta-analytic review of correlates. Applied Psychology: Health and Well-Being, 8(3), 326–348. https://doi.org/10.1111/aphw.12074

Meta-analytic review of 28 PE-specific studies examining correlations between perceived autonomy-supportive teaching and SDT outcomes including leisure-time physical activity intentions. The study conducted a comprehensive literature search and a correlational meta-analysis within a strictly SDT framework. Autonomy support showed moderate-to-strong positive correlations with need satisfaction (r =.45) and leisure-time activity intentions (r = .32).

This meta bridges my classroom work to the ultimate goal of physical education—lifelong activity. My own decline in physical activity after ninth grade illustrates the consequences of insufficient autonomy support, highlighting the relevance of Lochbaum & Jean-Noël's findings for designing cooperative tasks that promote both in-school and out-of-school engagement. Lochbaum & Jean-Noël provide confidence that the choices and rationales I incorporate into cooperative tasks will encourage students to remain physically active outside of school. The strengths of the article include its exclusive focus on PE, which

ensures relevance to my teaching context, and its examination of leisure-time physical activity intentions, which links classroom autonomy support to students' real-world behavior outside of school. These features make the findings both practically meaningful and directly applicable to my action research goals. A limitation of the study is its reliance on correlational data, which prevents causal conclusions about the effect of autonomy-supportive teaching on need satisfaction or leisure-time activity. Experimental or longitudinal designs are needed to determine whether classroom practices directly cause increased out-of-school physical activity.

Ntoumanis, N. (2001). A self-determination approach to the understanding of motivation in physical education. British Journal of Educational Psychology, 71(2), 225–242. https://doi.org/10.1348/000709901158497

This study tested an integrated model combining Self-Determination Theory and Achievement Goal Theory with 424 British middle-school PE students. Perceived autonomy support from the teacher predicted satisfaction of autonomy, competence, and relatedness, which in turn predicted higher self-determined (intrinsic and identified) motivation in PE. Self-determined motivation then strongly predicted greater concentration, effort, positive affect, and—most importantly—students' intention to engage in physical activity outside of school and in the future. The model explained 50–70% of variance in these outcomes.

This article is critical to my action research because it is one of the first to show that what happens in PE class directly influences students' lifelong physical activity intentions—the ultimate goal of physical education. When I look back at my own disengagement from team sports after ninth grade, I now see it through Standage et al.'s lens: low relatedness and limited autonomy support in PE reduced my self-determined motivation and weakened my intention to stay active. I am designing my cooperative learning intervention to intentionally reverse this

pattern, fostering both autonomy and relatedness for my current students. The strengths of the article include its pioneering application of a PE-specific SDT model, which demonstrates how autonomy, competence, and relatedness operate together to predict motivation and lifelong activity intentions. Additionally, the use of rigorous statistical modeling, explaining 50-70% of variance in key outcomes, strengthens the credibility of the findings and provides clear, quantifiable benchmarks for applied interventions. A limitation of the study is that it was conducted with British middle-school students in the early 2000s, which may limit generalizability to contemporary PE context in other countries. Changes in curriculum, technology, or cultural attitudes toward PE could affect how autonomy-supportive practices influence student motivation today.

Papaioannou, A., Tsigilis, N., Kosmidou, E., & Milosis, D. (2007). Measuring perceived motivational climate in physical education: Psychometric properties of the Greek version of the Learning and Performance Orientations in Physical Education Classes Questionnaire (LAPOPECQ). International Journal of Sport and Exercise Psychology, 5(3), 281–299. https://doi.org/10.1080/1612197X.2007.9671835

The study aimed to validate a comprehensive instrument (LAPOPECQ) measuring five dimensions of motivational climate in PE, including teacher-initiated mastery climate and cooperative learning, and to link these dimensions to SDT psychological needs and motivational regulations.

820 Greek secondary students completed the new questionnaire along with SDT-based need satisfaction and motivation scales; confirmatory factor analysis and regression were used. The study explicitly integrates Achievement Goal Theory (task/ego climates) with Self-Determination Theory, allowing for nuanced examination of how motivational climate

predicts need satisfaction and regulation. Perceived “cooperative learning” and “improvement/importance” climates were the strongest predictors of autonomy, competence, and relatedness satisfaction, which fully mediated the path to intrinsic motivation and identified regulation. Perceived “competition and worry” climate negatively predicted need satisfaction.

This is a great article for my project because it isolates cooperative learning as one of the strongest predictors of relatedness in PE, directly supporting my intervention choice. When I entered competitive team sports in ninth grade without prior social bonds, I experienced the “worry” and exclusion this study identifies, highlighting the importance of intentionally structured cooperative learning in fostering relatedness. Papaioannou et al. provide both a validated measurement tool for assessing motivational climate and compelling evidence that cooperative structures are essential, not optional, for promoting relatedness and motivation among students.

The strengths of the article include its large sample of 820 secondary students, which increases the reliability and generalizability of findings, and its rigorous psychometric validation of the LAPOPECQ instrument, which provides a robust tool for measuring motivational climate in PE and linking it to SDT constructs. A limitation of the study is its cross-sectional design, which prevents conclusions about causality between perceived motivational climate, need satisfaction, and motivation. Longitudinal or experimental research would be needed to determine whether cooperative learning climates directly cause increases in relatedness and intrinsic motivation.

Ryan, R. M., & Deci, E. L. (2000). Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. American Psychologist, 55(1), 68–78. https://doi.org/10.1037/0003-066X.55.1.68

This seminal article presents the full theoretical framework of Self-Determination Theory, introducing the three basic psychological needs (autonomy, competence, and relatedness) and the continuum of motivation ranging from amotivation through extrinsic forms to intrinsic motivation. The authors synthesize decades of research across domains (education, sport, work, health) to demonstrate that satisfaction of these three needs is essential for intrinsic motivation, psychological growth, and well-being, whereas need-thwarting environments produce controlled motivation or amotivation.

For my project, this is the theoretical cornerstone. My transition from a highly autonomous homeschool environment (high autonomy and competence, low relatedness) to a traditional public school PE class, where I felt disconnected from peers, illustrates what happens when relatedness is neglected—my intrinsic motivation for physical activity declined sharply. Ryan and Deci's explanation that all three needs must be supported simultaneously guides every instructional decision I make, including offering meaningful choices (autonomy), ensuring mastery experiences for all skill levels (competence), and using cooperative structures so that no student feels excluded (relatedness). The strengths of the article include its integration of multiple decades of research across domains, providing a comprehensive theoretical framework, and its strong predictive validity, demonstrating how satisfaction or thwarting of the three needs reliably predicts motivation and well-being. A limitation of the article is that much of the evidence summarized is cross-sectional, which prevents causal conclusions about the effects of need satisfaction on motivation. Longitudinal or experimental research is needed to confirm the temporal or causal relationships implied by SDT.

Standage, M., Duda, J. L., & Ntoumanis, N. (2003). A model of contextual motivation in physical education: Using constructs from self-determination and achievement goal

theories to predict physical activity intentions. Journal of Educational Psychology, 95(1), 97–110. https://doi.org/10.1037/0022-0663.95.1.97

This study was one of the first to apply Self-Determination Theory directly to the physical education setting. Ntoumanis surveyed 328 British secondary school students (ages 14–16) to examine how perceived autonomy support from the PE teacher, along with the three psychological needs (autonomy, competence, and relatedness), predicted different types of motivation, effort, enjoyment, boredom, and intention to continue physical activity, and preference for challenge. Using structural equation modeling, he found that an autonomy-supportive teaching style strongly predicted satisfaction of all three needs, which in turn led to higher intrinsic motivation, greater effort, more enjoyment, and stronger intentions to remain physically active in the future. In contrast, controlling teaching behaviors and ego-involving climates increased amotivation and boredom.

This article is foundational to my entire action research project. It was the first to clearly show in a PE context that relatedness (feeling connected to peers and teacher) and cooperative, self-referenced environments matter just as much as competence and choice. This mirrors my personal experience of feeling socially isolated upon entering public school PE, despite possessing high competence from homeschooling. Ntoumanis's finding that cooperative learning and personal improvement goals enhance relatedness and intrinsic motivation directly support my plan to implement cooperative structures that help every student feel valued and connected in PE. The strengths of the article include its foundational status in the field, as evidenced by over 50,000 citations, and its clear demonstration of how autonomy, competence, and relatedness operate together in educational settings, providing a theoretical and empirical basis for subsequent research and practice in PE. A limitation of the study is that it was not exclusively

conducted in PE, although its findings are widely applicable across educational contexts. Future research could replicate the model specifically in PE settings to confirm contextual relevance.

Standage, M., Duda, J. L., & Ntoumanis, N. (2005). A test of self-determination theory in school physical education. British Journal of Educational Psychology, 75(3), 411–433. https://doi.org/10.1348/000709904X22359

This longitudinal study followed 300 British secondary students across one school year to test an expanded motivational sequence integrating SDT and AGT. The authors examined how perceived teacher-created task-involving (mastery) and improvement-focused) versus ego-involving (normative comparison and competition-focused) climates interact with autonomy support to influence the three psychological needs, self-determined motivation, and leisure-time physical activity intentions and behavior. Data were collected at three time points using validated questionnaires; structural equation modeling tested both direct and mediated pathways. The study used an integrated model combining Self-Determination Theory and Achievement Goal Theory, allowing the authors to examine how motivational climate and autonomy support jointly influence psychological needs, motivation, and physical activity behavior. A task-involving climate and high autonomy support synergistically predicted greater autonomy, competence, and relatedness satisfaction, leading to higher self-determined motivation in PE and, crucially, more physical activity outside of school one year later. Ego-involving climates undermined need satisfaction and reduced future activity.

This article profoundly shapes my action research design. My own PE experiences included numerous ego-involving moments—being ranked, picked last, or compared to naturally athletic peers—which undermined my relatedness and sense of competence despite my actual abilities. Standage et al. (2005) provide empirical evidence that combining

cooperative, mastery-focused activities with student choice – which mirrors my intervention design– is an effective strategy for promoting lifelong engagement in physical activity. The strengths of the article include its longitudinal design, which allows for examination of changes over time, and its measurement of out-of-school physical activity, providing evidence that classroom motivational climates can influence real-world behavior beyond PE. These features strengthen the study's relevance for applied interventions aimed at promoting lifelong physical activity. A limitation of the study is that it was conducted in only two schools, which may limit generalizability to broader populations. Future research including more schools and diverse contexts would increase confidence in the applicability of the findings.

Vasconcellos, D., Parker, P. D., Hilland, T., Cinelli, R., Owen, K. B., Kapsal, N., Lee, J., Antczak, D., Ntoumanis, N., Ryan, R. M., & Lonsdale, C. (2020). Self-determination theory applied to physical education: A systematic review and meta-analysis. Journal of Educational Psychology, 112(7), 1444–1469. https://doi.org/10.1037/edu0000420

This comprehensive systematic review and meta-analysis synthesized 144 SDT studies in physical education (total N > 30,000 students) using path modeling to examine how autonomy support, need satisfaction, and motivation predict effort, enjoyment, and future physical activity intentions. The analysis strictly applied SDT principles. Autonomy support strongest predictor of need satisfaction (r = .52) and intrinsic motivation (r = .46); need satisfaction mediated effects on effort, enjoyment, and future activity intentions.

This is the definitive PE-specific SDT meta-analysis and gives my go-to source for expected effect sizes in my own data. This meta-analysis confirms that the cooperative, autonomy-supportive environment I am designing is likely to produce measurable increases in all three psychological needs and, importantly, enhance students' intentions to remain physically

active after leaving my class. The strengths of the article include its exclusive focus on PE, ensuring direct relevance to my teaching context, and its sophisticated path analysis, which provides clear evidence of the mediating role of psychological needs between autonomy support and motivational outcomes. These features make the findings particularly useful for designing evidence-based interventions in PE. A limitation of the study is that most included studies were cross-sectional, which limits the ability to draw causal conclusions about the effects of autonomy support on need satisfaction, motivation, and future physical activity. Longitudinal or experimental studies would be needed to confirm these causal pathways.

Conclusion

The research presented in this chapter provides a strong and consistent foundation for understanding how motivation is developed and sustained in physical education. Across diverse methodologies and contexts, the literature demonstrates that when teachers intentionally support students' needs for autonomy, competence, and relatedness, students are more likely to experience intrinsic motivation, demonstrate higher engagement, and develop positive attitudes toward physical activity.

A central finding across these studies is the powerful role of cooperative learning and mastery-oriented climates in fostering relatedness and promoting meaningful participation. Rather than emphasizing competition alone, the literature suggests that structured, supportive environments, where students can collaborate, experience success, and feel valued, lead to more consistent and equitable engagement. These findings directly support the design of my instructional unit, which prioritizes cooperative experiences as a foundation before introducing competitive elements.

At the same time, several limitations across the literature must be acknowledged, including the prevalence of cross-sectional designs, limited longitudinal evidence, and variability in how motivation is measured. These gaps highlight the need for classroom-based research that examines how specific instructional strategies impact student engagement in real-world settings.

In response to this need, my action research project applies these theoretical and empirical insights within my own teaching context. By implementing and reflecting on a structured striking unit grounded in Self-Determination Theory and cooperative learning, this study seeks to contribute to a more nuanced understanding of how instructional design can influence student motivation, cooperation, and engagement in physical education. The following chapter outlines the methodology used to investigate these questions in practice.

Chapter 3. Methods

Richard Sagor (2000), in *Guiding School Improvement with Action Research*, defines action research as "a disciplined process of inquiry conducted by and for those taking the action" (p. 3). Unlike traditional research that emphasizes generalizability, action research is intended to improve the practitioner's work in a specific context. Its purpose is systematic refinement of practice through planning, data collection, analysis, and responsive adjustment. Because the educator both conducts and applies the research, action research remains practical, empowering, and closely tied to classroom realities.

Sagor (2000) describes a cyclical process in which teachers select a focus, clarify theoretical assumptions, develop aligned research questions, collect multiple forms of classroom data, analyze patterns, report findings, and take informed action to initiate a new cycle. This iterative structure aligns with the present study's goal of refining instructional design to enhance student engagement, motivation, cooperation, and skill development.

The focus of this project is a three-week fifth-grade progressively structured striking unit that blends cooperative and competitive game structures. Students progress from individual striking control to cooperative rallies, rule-based partner play, two-on-two competition, and a structured tournament. Instructional sequencing prioritizes cooperative experiences to build competence and relatedness before introducing competition. This study examines how such sequencing affects motor skill development and psychological engagement.

Grounded in Self-Determination Theory (SDT; Ryan & Deci, 2000), the study recognizes that intrinsic motivation is supported when autonomy, competence, and relatedness are satisfied. Cooperative learning in PE has been shown to increase intrinsic motivation, relatedness, and positive peer interaction (Ntoumanis, 2001; Fernández-Espínola et al., 2020; Vasconcellos et al.,

2020). At the same time, competition remains motivating in PE. This unit scaffolds competition within cooperative norms to examine its effects on competence, communication, engagement, and safety.

Action research is appropriate because the intervention is implemented in my classroom, informed by reflection on engagement patterns, and embedded in routine instruction. Immediate refinement rather than broad generalization is the goal. Consistent with Sagor (2000), this study allows real-time testing and adjustment to create an inclusive, humanizing PE environment for students with IEPs, 504 plans, English Learners, and TAG students.

The purpose of this study is to investigate how a structured striking unit influences directional striking control, cooperation and communication behaviors, and engagement in competitive contexts. The guiding research questions are:

1. How does a progressively structured striking unit affect fifth-grade students' directional striking control and perceived competence?
2. How do cooperative and competitive structures influence students' cooperation, communication, and fair play behaviors?
3. How does structured competition (two-on-two play and a tournament) impact engagement, safety, and rule adherence?

These questions are directly aligned with the theoretical framework presented in Chapter 1 and the literature reviewed in Chapter 2. Rather than attributing engagement or disengagement to student disposition alone, they examine how instructional design mediates motivation and participation in physical education.

Participants and Setting

This study takes place in a rural Oregon district in the Willamette Valley near the South Santiam River, with a population of approximately 19,960. Historically rooted in farming and logging, the community is often called the "grass seed capital of the world." The district serves about 3,875 students across ten schools. Students are predominantly White (78%), with 13% Hispanic/Latino and 7% multiracial. Approximately 5% are English Learners, and 18% receive special education services. The district is Title I, reflecting the presence of low-income households. Seventeen languages are spoken, most commonly Spanish, English, and Russian, with multilingual learners supported through ELD services.

Community resources, including food assistance and domestic violence support, reflect both economic need and strong local care networks. The district operates under PBIS and emphasizes CARES values (Cooperation, Attitude, Respect, Effort, Service). The school mission centers on preparing students to be career- and college-ready through engagement and critical thinking.

The focal class is a fifth-grade PE class at an elementary school meeting twice weekly for 30 minutes. The class has 24 students (14 female, 10 male), reflecting district demographics. Three students are English Learners, five have IEPs or 504 plans (primarily Speech/Language Impairment or ADHD), and several are TAG. All are at grade-level PE skill development, though motivation varies. Many prefer cooperative, socially interactive activities, while some hesitate in competitive contexts, informing the unit's design.

Students bring relational and social strengths, enthusiasm for teamwork, and interest in sports such as basketball, volleyball, football, and dance. Bilingual students often support peers, reflecting linguistic assets. The rural context provides familiarity with outdoor activity and collaborative community events. Barriers include low perceived competence, language

processing challenges, attention regulation needs, and household economic stressors, all of which highlight the importance of instructional structures that support competence, relatedness, and psychological safety.

This is my second year with the class, allowing for strong rapport and familiarity with student social dynamics, skill levels, and motivational patterns. Strengths include structured routines and a welcoming environment. A growth area involves sustaining engagement during competitive elements. For example, when competitive games led to rising frustration, I briefly paused play and guided students to refocus on teamwork by acknowledging effective communication or effort, which helped diffuse tension and maintain participation.This study emerges directly from that reflection, demonstrating how action research can guide intentional instructional refinement.

Data Collection and Analysis

Consistent with Sagor's (2000) framework for action research, this study used multiple sources of classroom-based evidence to examine how a structured striking unit influenced student skill development, cooperation, and engagement. Action research emphasizes collecting practical data embedded in everyday teaching practice so that instructional decisions can be informed by patterns emerging directly from the classroom.

Data sources included the three-week unit plan, curricular materials aligned with the SHAPE America National Physical Education Standards, daily lesson plans, teacher reflection journals, student exit reflections, informal observations of student engagement, the Striking Unit Checklist assessment rubric, and feedback from my mentor teacher and university field supervisor. These sources documented both the intended instructional design and students' responses throughout the unit.

The instructional documents outlined the progression of the unit, which moved from individual striking control to cooperative partner rallies, rule-based partner play, and a final two-on-two tournament. This sequence intentionally emphasized cooperative learning early in the unit to support competence and relatedness before introducing competitive gameplay.

Student performance was assessed using the Striking Unit Checklist, which served as the primary formative and summative assessment tool. The rubric evaluated directional striking control, safety behaviors, and cooperation and fair play. During lessons, observational notes were recorded while students participated in stations, partner rallies, and small-sided games, allowing patterns of skill execution, safety awareness, and peer interaction to be documented.

Teacher reflection journals were maintained after each lesson to record observations related to student engagement, communication, rule adherence, and overall classroom dynamics. Sagor (2000) identifies reflective journaling as an important component of action research because it allows teachers to capture immediate insights about instructional effectiveness and student responses to teaching strategies.

Student perspectives were gathered through brief exit reflections and end-of-class discussions in which students reflected on strategies that helped maintain rallies, improve control, or support cooperation with partners. Informal observations during gameplay also documented behaviors such as peer encouragement, communication, rule adherence, and safe equipment use. Additional insight was provided through feedback from my mentor teacher and university field supervisor, whose observations offered an external perspective on instructional effectiveness and student engagement.

Data analysis followed a qualitative procedure commonly used in classroom-based action research. After the unit concluded, reflection journals, observational notes, exit reflections,

assessment records, and mentor feedback were compiled and reviewed. The first stage involved open coding, in which recurring behaviors and comments were labeled with descriptive codes.

Initial codes included directional control, student confidence, peer communication, cooperation, rule adherence, engagement, and safety awareness. These codes were closely aligned with the research questions and instructional goals of the striking unit. Related codes were then grouped into broader themes. For example, codes related to encouragement and partner collaboration formed a theme of peer cooperation and relatedness, while successful striking technique and expressions of confidence reflected skill development and perceived competence. Observations related to effort, tournament participation, and rule following informed a theme of engagement in competitive contexts.

To strengthen the credibility of the analysis, triangulation was used by comparing patterns across multiple data sources, including observational notes, reflection journals, exit reflections, assessment records, and mentor feedback. These patterns were interpreted through the theoretical framework of Self-Determination Theory presented in Chapter 1 to ensure conceptual alignment with autonomy, competence, and relatedness. My mentor teacher also reviewed portions of the coded data and emerging themes, providing feedback that helped refine interpretations and strengthen the trustworthiness of the analysis.

Researcher Positionality

As both the teacher and researcher in this study, my personal experiences and educational background shape how I design instruction, interpret student behavior, and analyze classroom data. Action research recognizes that the practitioner is embedded in the context being studied, making reflection on positionality an essential component of the research process (Sagor, 2000).

My interest in student motivation and engagement in physical education is informed by my own educational experiences. I was homeschooled throughout elementary and middle school, where learning emphasized independence, flexibility, and personal responsibility. When I transitioned to a public high school, I initially faced challenges related to social interaction and classroom norms. These experiences highlighted the importance of peer connection and belonging for student motivation, insights that directly inform my approach to teaching physical education. In daily practice, this is reflected through the intentional integration of social-emotional learning (SEL) strategies, such as structured partner interactions, guided communication prompts, and class norms that emphasize respect, encouragement, and inclusive participation. Because physical education involves constant peer interaction, I regularly reinforce skills such as cooperation, conflict resolution, and positive communication, particularly during cooperative and competitive activities. These practices help create an environment where students feel psychologically safe, supported, and more willing to engage in skill development and gameplay.

These experiences connect closely with the study's theoretical framework, Self-Determination Theory (Ryan & Deci, 2000). Reflecting through this lens, I recognize that I experienced autonomy and competence in homeschooling but initially struggled with relatedness in a larger school setting. This awareness guides my instructional decisions, particularly my focus on creating learning environments that support all students' sense of belonging, competence, and confidence.

As a teacher candidate who has worked with this class for two years, I bring familiarity with students' social dynamics, learning needs, and motivational patterns. This knowledge supports effective instruction but also has the potential to influence how I interpret student

behaviors and engagement. To address this, I intentionally incorporated multiple data sources and sought feedback from my mentor teacher and university supervisor, adding external perspectives to strengthen the credibility of my analysis.

Rather than attempting to remove my influence from the study, this action research project acknowledges that my perspective is central to the inquiry process. By reflecting on how my experiences shape instructional design and data interpretation, this study provides a thoughtful and transparent examination of how structured physical education instruction can influence student engagement, cooperation, and skill development.

Chapter 4. Findings

This chapter presents the findings from the action research study examining how a progressively structured striking unit influenced student skill development, cooperation, engagement, and safety during physical education instruction. Data were collected through observational notes, rubric assessments, student exit tickets, and teacher reflection journals across a five-lesson instructional unit.

The findings are organized around three research questions examining how a progressively structured striking unit influenced (a) students' directional striking control and perceived competence, (b) cooperation and fair play behaviors during physical education activities, and (c) engagement, safety, and rule adherence during structured competitive gameplay.

Analysis of the collected data revealed three major themes: development of directional striking control and perceived competence, growth in cooperation and fair play behaviors through structured cooperative learning, and increased engagement, safety, and rule adherence during structured competitive gameplay. Each theme is presented using quantitative and qualitative evidence collected throughout the five-lesson striking unit.

Development of Directional Striking Control and Perceived Competence

Students demonstrated steady improvement in directional striking control across the five-lesson unit. The progressively structured instructional design supported students' perceived competence by providing repeated opportunities to apply striking skills in increasingly authentic cooperative and competitive contexts. Rather than introducing full gameplay immediately, the instructional sequence gradually increased in complexity from individual balloon control activities to cooperative partner rallies, modified rule-based gameplay, 2-on-2 competition, and

tournament play. This progression helped students build confidence before participating in more demanding gameplay situations.

Data from the Striking Unit Checklist showed a consistent upward trend in directional striking control across the unit. In Lesson 1, most students performed at Levels 1–2, indicating developing control and inconsistent striking accuracy. During early lessons, many students relied on uncontrolled “panic hits,” frequently overhit the balloon, or struggled to intentionally direct strikes toward a partner or open space. Observational notes from Lesson 1 confirmed that students focused primarily on contacting the balloon rather than controlling direction or force.

By Lesson 3, most students reached Level 3 and demonstrated more consistent directional placement during rallies and modified gameplay. The introduction of structured game rules in Lesson 3 influenced both striking control and student focus. Students were required to maintain rallies while following the three-hit rule, keeping the balloon in bounds, and cooperating with a partner. Teacher modeling emphasized “control, not power,” and students demonstrated softer upward strikes, improved paddle angles, and increased awareness of ball trajectory. During guided questioning, students identified “soft hits,” “ready position,” and “communication” as strategies that helped sustain rallies successfully. Observational notes from this lesson documented fewer uncontrolled hits and longer rally sequences compared to earlier lessons.

By Lessons 4 and 5, the majority of students performed at Levels 3–4, reflecting improved control, intentional placement, and consistent performance during gameplay. As students transitioned into 2-on-2 gameplay, they demonstrated stronger directional awareness, more strategic placement, and sustained control under competitive conditions. In Lesson 4, students alternated hits with teammates, communicated during rallies, and applied gameplay rules independently. These additional tactical and communication demands strengthened striking

consistency, as successful gameplay required controlled placement rather than forceful hitting. Teacher reflection notes documented that students self-corrected paddle angle and force without prompting, and rallies became longer and more structured by the end of the unit.

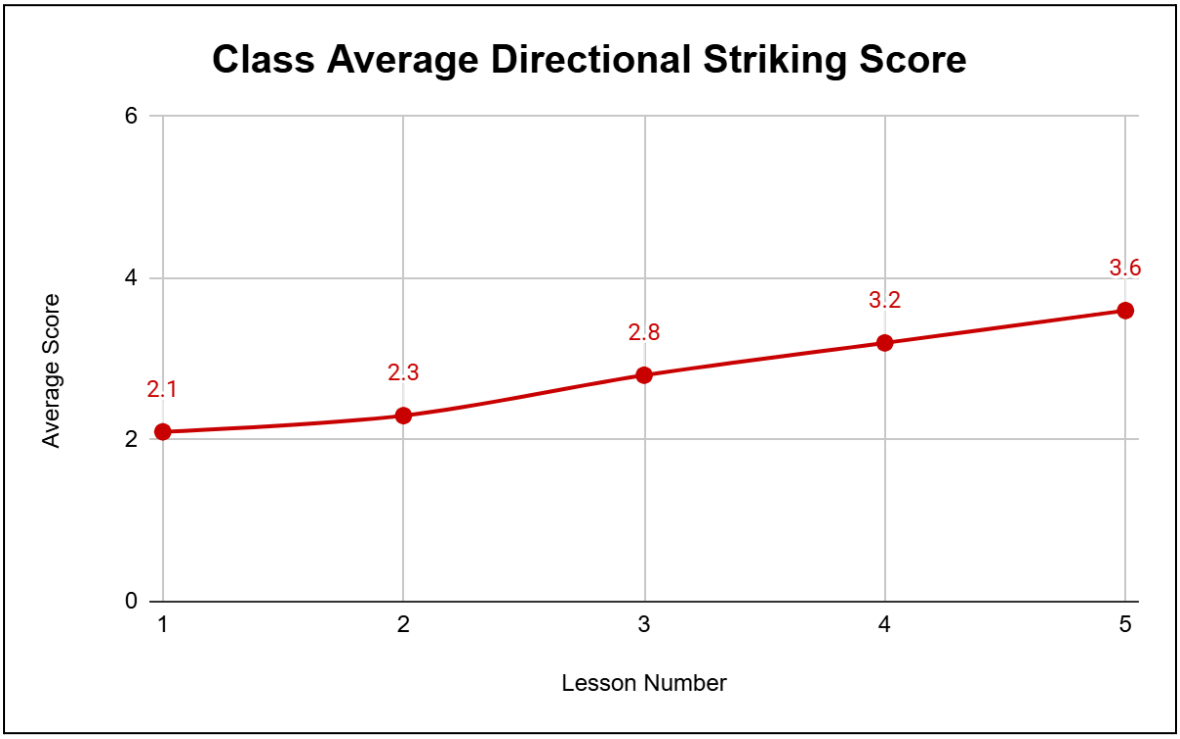

Figure 1. Class Average Directional Control Scores Across Five Lessons

This progression demonstrates that skill development was cumulative and supported through repeated practice opportunities embedded within cooperative rallies and structured gameplay. The instructional sequence enabled students to develop control progressively through increasingly complex learning environments.

Lower-performing students demonstrated the most noticeable growth in directional striking control over time. Table 1 shows changes in student performance across the unit.

Student	Lesson 1	Lesson 3	Lesson 5	Observed Growth
AbH	1	2	3	Improved directional control and confidence during rallies

ZaH	1	2	3	Increased striking accuracy and effort during gameplay
AmH	1	2	3	Demonstrated greater consistency and control over time

Figure 2. Growth in Directional Striking Control for Lower-Performing Students

These students initially struggled with directional consistency and controlled striking patterns. In early lessons, they frequently used excessive force, struggled to sustain rallies, and relied heavily on teacher prompting. By the end of the unit, they demonstrated improved placement accuracy, longer rally participation, and increased willingness to engage in both cooperative and competitive tasks. Observational notes show that these students shifted from simply attempting to keep the balloon in play to intentionally directing their strikes.

Students who entered the unit with stronger striking skills also demonstrated growth, though more in refinement and leadership behaviors than large numerical score increases.

Student	Lesson 1	Lesson 3	Lesson 5	Observed Growth
CoS	3	4	4	Refined directional accuracy and peer leadership
PaM	3	3	4	Maintained consistency while supporting peers
AdFD	3	3	4	Demonstrated improved strategic placement and communication

Figure 3. Skill Refinement Among Higher-Performing Students

These students consistently demonstrated stronger paddle control throughout the unit, with growth reflected in strategic gameplay decisions, communication, and leadership behaviors. During Lessons 3 and 4, they modeled ready position, encouraged controlled hitting, and supported peers during gameplay. In 2-on-2 activities, they demonstrated intentional placement into open space and effective communication with partners. Their development reflected refinement of tactical decision-making and leadership within gameplay contexts.

Teacher reflection journals and observational notes further supported these findings. Across the unit, students increasingly used controlled paddle angles rather than random strikes, demonstrated fewer "panic hits," and began self-correcting force and direction without teacher prompting. Rally duration also increased substantially by Lessons 4–5 compared to the beginning of the unit. During Lesson 4 gameplay, students increasingly communicated using phrases such as "mine" and "yours" to coordinate movement and maintain rally flow. These behaviors suggested that students were beginning to connect directional striking control with tactical gameplay awareness and teamwork.

The instructional progression described in Chapter 3 directly contributed to these outcomes. Lesson 3 introduced modified gameplay rules such as the three-hit rule, out-of-bounds rule, and controlled serving expectations, which shifted student focus from simply contacting the balloon toward intentionally controlling placement and maintaining rallies. Lesson 4 further increased complexity by adding 2-on-2 gameplay, alternating-hit requirements, communication expectations, and conflict-resolution strategies. This gradual increase in cognitive, tactical, and social demands reduced early frustration while supporting confidence, consistency, and strategic skill development over time.

These findings align with Self-Determination Theory (Ryan & Deci, 2000), particularly the psychological need for competence. Students demonstrated increasing confidence and persistence as they experienced repeated mastery opportunities within structured gameplay situations. The findings also support Vasconcellos et al. (2020), who found that competence satisfaction contributes to intrinsic motivation, as well as Standage et al. (2005), who emphasized the importance of mastery-oriented learning climates for skill development and persistence. In this study, students became increasingly willing to persist, self-correct, and remain engaged as they experienced success within progressively scaffolded learning tasks.

Overall, the findings indicate that a progressively structured striking unit supported meaningful improvements in directional striking control and perceived competence. Students improved through repeated, scaffolded opportunities to apply skills in authentic cooperative and competitive contexts. The progression from controlled individual practice to cooperative rallies and structured gameplay helped students develop both technical striking ability and confidence in their ability to participate successfully in game-like situations.

Growth in Cooperation and Fairplay Behaviors Through Structured Cooperative Learning

Students demonstrated clear growth in cooperation, communication, and fair play behaviors as the unit progressed from individual skill development into structured cooperative learning activities. The intentionally sequenced partner and small-group tasks strengthened peer interaction, shared responsibility, and collaborative participation during physical activity. Rather than assuming students would naturally cooperate, the instructional design explicitly taught, modeled, and reinforced communication, teamwork, and respectful gameplay behaviors throughout the unit.

Data from the Striking Unit Checklist showed a steady increase in cooperation and fair play scores across the five-lesson unit. In Lesson 1, most students performed at Level 2, reflecting developing cooperation skills and inconsistent communication during activities. Early observations showed that students focused primarily on individual performance, with limited verbal communication, uneven participation, and frequent need for teacher prompting to support teamwork and shared responsibility. Some students also became frustrated when rallies ended quickly, further limiting cooperative interaction.

By Lesson 3, most students reached Level 3 and demonstrated more consistent turn-taking, communication, and peer support during gameplay. The introduction of structured game rules in Lesson 3 significantly increased student awareness of shared responsibility during partner play. Students were required to maintain rallies while following the three-hit rule, keeping the balloon in bounds, and rotating appropriately when out. Teacher instruction consistently emphasized “control and cooperation,” and guided questioning helped students identify communication as a key strategy for sustaining rallies.

Lesson 3 observational notes documented increased verbal encouragement between partners, more consistent use of cues such as “soft hit” and “your turn,” and a more positive response to errors during play. Students also demonstrated stronger accountability to partners, as both individuals were responsible for maintaining successful gameplay. Compared to earlier lessons, cooperation became more visible through communication during rallies, shared movement decisions, and collaborative problem-solving rather than parallel participation.

By Lessons 4 and 5, several students performed at Levels 3–4, demonstrating increasingly independent cooperation, encouragement, and fair play behaviors during structured competitive gameplay. As students transitioned into 2-on-2 competition, communication and teamwork

became essential for success. Students were required to alternate hits, communicate using phrases such as “mine” and “yours,” and resolve disagreements through structured strategies such as rock-paper-scissors or calm discussion. These increased social and tactical demands strengthened cooperative behaviors because successful performance depended directly on effective teamwork.

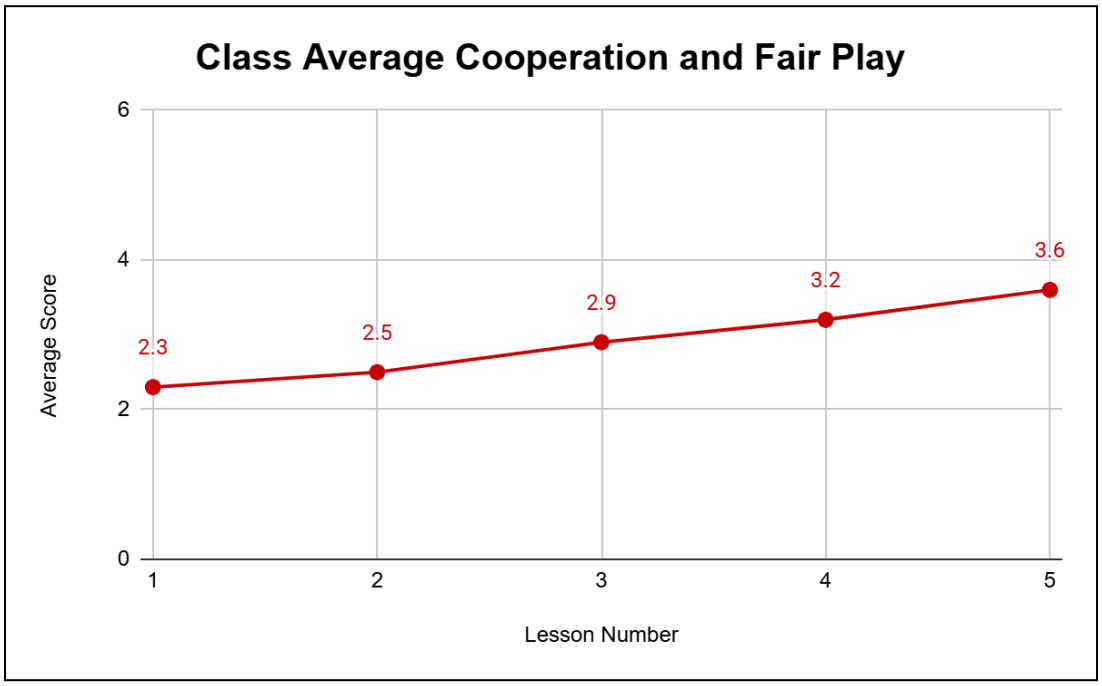

Figure 4. Class Average Cooperation and Fair Play Scores Across Five Lessons

The progression of these scores demonstrates that cooperative behaviors developed gradually through repeated exposure to structured partner and group learning tasks. Compared to directional striking control in Theme 1, social skill development required more sustained reinforcement and repeated opportunities for interaction. The data shows that cooperation improved not simply through grouping students together, but through intentional modeling, practice, reinforcement, and integration of cooperative expectations into gameplay structures.

Individual student data further demonstrated growth in communication, teamwork, and peer support behaviors across varying starting ability levels.

Student	Lesson 1	Lesson 3	Lesson 5	Cooperative Growth Observed
SoB	2	3	4	Increased communication and encouragement
HaG	2	2	3	Improved participation and turn-taking
JuM	2	3	4	Demonstrated stronger teamwork and peer support

Figure 5. Growth in Cooperation and Fair Play Behaviors for Developing Students

During early lessons, these students required frequent teacher prompting to communicate, share responsibility, and demonstrate fair play behaviors. Some students hesitated to communicate with partners, while others became frustrated when rallies ended prematurely or errors occurred. By the later lessons, students independently initiated communication, encouraged peers after mistakes, and sustained cooperative participation without teacher direction. Observational notes from Lessons 4–5 documented consistent use of “mine” and “yours,” peer support during restarts, and more positive emotional responses during competitive play.

The transition into 2-on-2 gameplay was particularly beneficial for students who initially struggled with cooperation. Because success required alternating hits and shared decision-making, students were repeatedly placed in situations that required communication and collaboration. Over time, these repeated experiences strengthened students’ social confidence and willingness to engage collaboratively.

Students who entered the unit with stronger cooperative skills also demonstrated growth, although this growth was reflected more in leadership and peer facilitation than in large score increases.

Student	Lesson 1	Lesson 3	Lesson 5	Cooperative Growth Observed
CoS	3	3	4	Modeled communication and supported peers
PaM	3	3	4	Provided rule clarification during gameplay
AdFD	3	3	4	Demonstrated leadership during cooperative tasks

Figure 6. Leadership Development Among Higher-Performing Cooperative Students

These students increasingly assumed informal leadership roles throughout the unit by organizing gameplay, modeling communication, clarifying rules, and supporting peers during both cooperative and competitive activities. During Lesson 4, they frequently reminded teammates to alternate hits, encouraged peers after missed attempts, and helped resolve minor disagreements appropriately. Observational notes also documented consistent modeling of ready position, controlled striking, and independent reinforcement of gameplay expectations without teacher prompting.

As the unit progressed, cooperation shifted from teacher-supported behavior to student-initiated communication and peer accountability. During Lesson 5 tournament and gameplay activities, students independently organized teams, managed rotations, and reinforced

gameplay expectations without teacher intervention. These behaviors demonstrated that students internalized both the social and behavioral expectations of cooperative play.

Teacher reflection journals supported these findings. Early lessons required frequent teacher prompting for cooperation, while later lessons showed increased peer communication, encouragement, and self-regulation during gameplay. By Lessons 4–5, students regularly engaged in peer coaching, organized gameplay independently, and supported teammates without teacher direction.

The instructional progression outlined in Chapter 3 directly contributed to these outcomes. Students first developed individual striking skills before progressing into cooperative rallies, structured partner play, 2-on-2 gameplay, and tournament activities. Lesson 3 introduced shared responsibility through the three-hit rule and elimination system, requiring cooperation for successful participation. Lesson 4 further strengthened communication and teamwork through alternating-hit requirements, structured partner dialogue, and conflict-resolution strategies. This gradual increase in social and tactical complexity prepared students to cooperate independently within competitive settings.

These findings align with cooperative learning research (Casey & Goodyear, 2015), which emphasizes structured interdependence as a driver of social interaction and learning. In this study, students relied on one another for successful task completion rather than simply working alongside peers. The findings also align with Self-Determination Theory (Ryan & Deci, 2000), particularly the need for relatedness, as students demonstrated increased engagement when they experienced stronger social connection and shared responsibility.

Additional support is provided by Papaioannou et al. (2007), who found that cooperative learning environments increase peer support, and Vasconcellos et al. (2020), who emphasized

relatedness as a key contributor to intrinsic motivation in physical education. These patterns were reflected in classroom observations, as students increasingly encouraged peers, clarified rules, and demonstrated shared accountability during gameplay.

Overall, the findings demonstrate that structured cooperative learning led to measurable improvements in cooperation, communication, and fair play behaviors across all ability levels. Students who initially demonstrated weaker cooperation skills showed the greatest growth in communication and participation, while students with stronger initial skills increasingly demonstrated leadership and peer support. The findings indicate that cooperation is not simply an inherent trait, but a skill developed through intentional instructional design and repeated structured peer interaction.

Increased Engagement, Safety, and Rule Adherence During Structured Competitive Gameplay

Students demonstrated consistent improvement in engagement, safety behaviors, and rule adherence as structured competitive gameplay was progressively introduced throughout the unit. Rather than reducing control or increasing disruption, the introduction of competition within a scaffolded instructional sequence strengthened self-regulation, sustained participation, and independent adherence to gameplay expectations. The progression from individual skill development to cooperative learning and structured competition provided students with the behavioral readiness necessary for safe and effective participation in game-based environments.

Data from the Striking Unit Checklist showed steady improvement across all three subcategories associated with this theme: safety behaviors, engagement during gameplay, and rule adherence. During Lessons 1–2, many students required frequent teacher intervention related to spacing, striking control, and basic gameplay expectations. Observational notes indicated that

students were often highly excitable during rallies, struggled with spatial awareness around other groups, and occasionally engaged in unsafe movement patterns while focusing on the balloon. Rule adherence was inconsistent, with repeated reminders needed for boundaries, paddle control, and appropriate transitions between turns.

By Lesson 3, students demonstrated clear improvements in behavioral control and awareness of game expectations during modified rule-based play. The introduction of the three-hit rule, out-of-bounds rule, and structured rotation system significantly increased student accountability. Because continued participation depended on rule adherence, students began regulating their own behavior more effectively. Teacher modeling of "control, not power" was consistently reflected in student performance, with more controlled strikes, improved spacing, and more intentional movement during gameplay.

Lesson 3 also resulted in fewer disputes and smoother transitions between rounds. Observational notes documented fewer unsafe swings, improved awareness of surrounding space, and quicker regrouping after errors compared to earlier lessons. Students also began self-correcting minor rule violations without immediate teacher intervention, indicating early internalization of gameplay expectations.

By Lessons 4–5, students demonstrated consistently safe movement patterns, sustained engagement, and strong rule adherence with minimal teacher support. The transition into structured 2-on-2 gameplay further strengthened self-regulation, as successful participation required communication, control, and cooperation. During Lesson 4, students were required to alternate hits, communicate during rallies, resolve disagreements respectfully, and apply increasingly complex rules independently. These demands promoted sustained focus and increased peer accountability throughout competitive play.

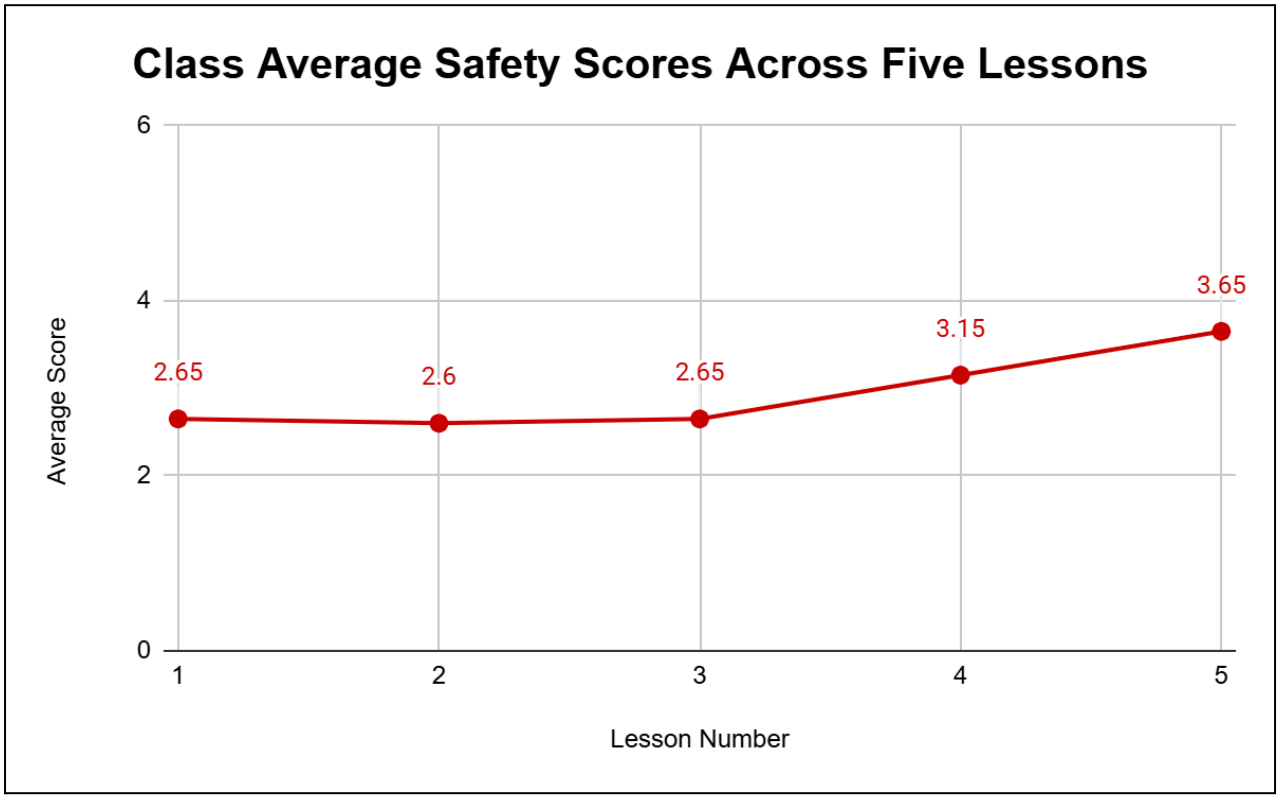

Figure 7. Class Average Safety Scores Across Five Lessons

Engagement remained consistently high throughout the competitive phases of the unit, particularly during 2-on-2 and tournament activities. Students sustained longer rallies, demonstrated increased persistence after errors, and required fewer teacher redirections over time. Rule adherence also improved progressively, with students independently clarifying expectations and correcting misunderstandings during gameplay without teacher prompting.

Individual student data further demonstrated clear growth in safety awareness and self-regulation, particularly among students who initially required higher levels of teacher supervision.

Student	Lesson 1	Lesson 3	Lesson 5	Safety Growth Observed
OwC	2	2	4	Improved spatial awareness and self-regulation

NoC	2	2	3	Reduced unsafe contact during gameplay
CaF	2	2	3	Demonstrated improved movement control and spacing

Figure 8. Growth in Safety Behaviors During Competitive Gameplay

These students initially demonstrated inconsistent spatial awareness, impulsive movement patterns, and limited control during group activities. Early observations documented unsafe proximity to other groups and difficulty maintaining controlled movement during active play. By Lessons 4–5, these same students demonstrated increased independence, improved spacing, and significantly stronger self-regulation. They consistently monitored their positioning, reduced excessive movement during rallies, and transitioned between gameplay rounds with minimal teacher intervention.

Students with stronger initial safety behaviors maintained consistently high performance while further refining communication and gameplay awareness.

Student	Lesson 1	Lesson 3	Lesson 5	Safety Growth Observed
CoS	3	3	4	Increased peer-aware communication
PaM	3	3	4	Demonstrated consistent spatial control

Figure 9. Safety and Spatial Awareness Among Higher-Performing Students

These students consistently demonstrated leadership in maintaining safe and organized gameplay environments. During 2-on-2 activities, they regularly reminded peers to maintain spacing, alternate hits, and communicate clearly to avoid collisions or confusion. Observational

notes also documented these students reinforcing rules independently, modeling controlled movement, and supporting peers in resolving minor conflicts during gameplay.

Student exit tickets provided additional insight into engagement and emotional response during competitive phases of the unit. Students consistently identified team-based play and autonomy as key contributors to enjoyment.

One student stated, “Day 5 was the best day because we got to create our teams,” indicating that ownership and choice increased engagement. Another student reflected, “I haven’t done sports since the 2nd grade but this was fun because it was like being on a team and nobody was yelling,” demonstrating that the structured progression created a supportive competitive environment.

Additional responses highlighted identity and relevance. One student wrote, “I liked creating the team name Red Fire Pickles,” while another stated, “I enjoyed the striking because even though it wasn’t volleyball, it was very similar and I like spiking.” These responses indicate that students experienced enjoyment while also recognizing connections between classroom striking activities and prior sport experiences.

Teacher reflection journals further supported these findings. Early lessons required frequent correction of spacing, safety, and rule understanding. By the final lessons, students independently organized gameplay, corrected peers, communicated effectively during rallies, and resolved minor disputes using strategies modeled earlier in the unit. During Lesson 5 gameplay, students regularly used verbal cues such as “mine” and “yours” to maintain safe spacing and coordination, while conflicts were resolved quickly through structured strategies such as rock-paper-scissors or calm discussion.

The instructional progression outlined in Chapter 3 was central to these outcomes. Students first developed individual striking control before progressing into cooperative partner rallies, rule-based partner play, structured 2-on-2 gameplay, and tournament activities. Lesson 3 established clear behavioral expectations and rule structures that increased accountability, while Lesson 4 added greater cognitive and social demands through alternating-hit requirements, communication expectations, and conflict-resolution procedures. This progression allowed students to develop behavioral control before participating in higher-pressure competitive contexts.

These findings align with Self-Determination Theory (Ryan & Deci, 2000), particularly the interaction between competence, relatedness, and behavioral regulation. As students developed confidence and stronger social connections, they demonstrated improved self-regulation during competitive play. The findings also support Vasconcellos et al. (2020), who identified competence as a key predictor of sustained engagement, and Haerens et al. (2018), who emphasized autonomy-supportive environments in reducing disruptive behavior and improving engagement. In addition, Casey and Goodyear (2015) highlighted the importance of structured peer accountability, which was evident as students increasingly corrected behaviors, reinforced rules, and supported teammates independently.

Overall, the findings demonstrate that structured competitive gameplay, when introduced progressively following cooperative learning, leads to significant improvements in engagement, safety, and rule adherence. Students who initially required substantial teacher support gradually transitioned toward independent self-regulation, demonstrating that safe and engaged participation in physical education is strongly influenced by instructional design rather than fixed student capability.

Conclusion

The findings presented in this chapter addressed the three guiding research questions related to (a) directional striking control and perceived competence, (b) cooperation and fair play behaviors during cooperative learning, and (c) engagement, safety, and rule adherence during structured competitive gameplay. Across all three themes, a consistent pattern emerged: students demonstrated the greatest growth when instruction progressed from individual skill development to cooperative learning and ultimately to structured competitive application.

The first theme demonstrated that students improved directional striking control and perceived competence through repeated, scaffolded opportunities to apply skills in authentic gameplay contexts. The second theme showed that structured cooperative learning strengthened communication, fair play, teamwork, and peer support behaviors over time. The third theme demonstrated that structured competition, when introduced progressively following cooperative learning experiences, increased engagement, improved safety behaviors, and strengthened rule adherence during gameplay.

These findings align with Self-Determination Theory (Ryan & Deci, 2000) and cooperative learning research discussed in Chapter 2, suggesting that competence, relatedness, and structured social interaction play important roles in student engagement and skill development in physical education settings. The findings also highlight instructional sequencing as a significant factor influencing student outcomes. By gradually increasing task complexity and social demands throughout the unit, students developed confidence, cooperation, and self-regulation before participating in more demanding competitive gameplay environments.

Overall, the findings support the central argument of this study: student skill development, cooperation, engagement, and safe participation in physical education are strongly

influenced by instructional design. When learning experiences are intentionally scaffolded through cooperative learning and progressive gameplay structures, students are more likely to demonstrate improved skill execution, positive social behaviors, sustained engagement, and independent self-regulation during physical activity.

Chapter 5. Discussion, Limitations, and Conclusion

The findings of this study demonstrate that a progressively structured striking unit can positively influence fifth-grade students' skill development, cooperation, engagement, and self-regulation during physical education. Across all three research questions, students showed the strongest growth when instruction progressed intentionally from individual skill development to cooperative learning and finally to structured competitive gameplay. These findings reinforce the central argument of this study: instructional design strongly shapes students' motivation, participation, and success in physical education settings.

The findings align closely with Self-Determination Theory (Ryan & Deci, 2000), particularly the importance of supporting students' needs for competence, relatedness, and autonomy. Students demonstrated increasing confidence and persistence as they experienced repeated mastery opportunities throughout the unit. Early lessons emphasized skill development through scaffolded balloon striking tasks, allowing students to experience success before participating in more socially and cognitively demanding gameplay. This progression appeared to strengthen perceived competence, particularly among students who initially struggled with directional control or participation. These findings support Vasconcellos et al. (2020), who found that competence satisfaction contributes strongly to intrinsic motivation and engagement in physical education.

The findings also align with Standage et al. (2005) and Jaakkola et al. (2016), who emphasized the importance of mastery-oriented learning climates over ego-oriented competitive environments. Rather than introducing competition immediately, this unit delayed formal competition until students had opportunities to develop both technical skills and social confidence through cooperative learning experiences. As students progressed into 2-on-2

gameplay and tournament activities, they demonstrated greater willingness to participate, stronger communication behaviors, and improved self-regulation compared to earlier lessons. This suggests that competition itself was not inherently disengaging; rather, students were more successful in competitive settings when competition was scaffolded through cooperative structures first.

The findings particularly support Casey and Goodyear's (2015) argument that cooperative learning strengthens social and affective outcomes in physical education. Throughout the unit, students increasingly relied on communication, encouragement, and shared responsibility to sustain successful gameplay. Cooperation was not treated as an assumed social skill, but rather as a behavior intentionally taught through structured gameplay expectations, partner tasks, and communication prompts. Students gradually shifted from teacher-dependent cooperation toward independent peer accountability and self-regulation. This finding extends Casey and Goodyear's work by demonstrating that cooperative learning can also serve as preparation for healthy competition rather than functioning in opposition to competitive gameplay.

Similarly, the findings support Fernández-Espínola et al.'s (2020) meta-analysis showing that cooperative learning interventions improve intrinsic motivation in physical education. Students consistently identified teamwork, communication, and shared success as reasons they enjoyed the unit. Several students also expressed increased confidence and enjoyment during competitive activities because the environment felt supportive rather than judgmental. One student specifically noted that the unit felt enjoyable because "nobody was yelling," suggesting that the cooperative climate reduced anxiety often associated with competitive sports participation. These findings reflect the relatedness component of SDT by showing how supportive peer interactions influence emotional engagement and willingness to participate.

The study also supports Haerens et al. (2018) and Aelterman et al. (2019), who argued that autonomy support is most effective when paired with clear structure and expectations. Students were given opportunities for voice and ownership throughout the unit, including creating team names, organizing gameplay, solving disputes, and making strategic decisions during rallies. However, these opportunities occurred within clearly defined behavioral and gameplay structures. Rather than creating disorder, structured autonomy appeared to increase accountability and independent self-regulation during competitive gameplay. Students gradually demonstrated fewer unsafe behaviors, stronger rule adherence, and more independent conflict resolution as the unit progressed.

In several ways, this study also extends the existing literature reviewed in Chapter 2. Much of the cooperative learning research in physical education focuses primarily on motivation or social outcomes, while this study demonstrated how cooperative learning, skill development, and safety behaviors interact simultaneously within a progressively sequenced instructional model. The findings suggest that cooperation may function not only as a motivational support but also as a mechanism for improving tactical awareness, communication, and behavioral regulation during gameplay.

Additionally, this study contributes to discussions surrounding competition in physical education. Several studies reviewed in Chapter 2 identified ego-oriented climates and excessive competition as contributors to disengagement and amotivation (Ntoumanis, 2001; Standage et al., 2005). However, the findings of this study suggest that competition itself does not necessarily reduce motivation when students first experience competence and relatedness through cooperative structures. Structured competition became increasingly engaging as students developed confidence, communication skills, and familiarity with gameplay expectations. This

finding suggests that the sequencing of competition may be just as important as the presence of competition itself.

The findings also connect closely to Freire's (2018) concept of education as a humanizing and participatory process and hooks' (1994) engaged pedagogy. Students were not passive participants simply completing physical tasks; rather, they became active contributors to the learning environment through communication, shared responsibility, and collaborative problem-solving. The classroom gradually shifted from teacher-directed management toward student-supported accountability and cooperation. This reflects the broader pedagogical goal discussed in Chapter 1 of creating a physical education environment where students feel empowered, connected, and capable of meaningful participation.

Finally, the findings connect personally to my own educational experiences transitioning from homeschooling into public-school athletics and physical education. One of the central goals of this project was creating a learning environment where students would feel supported rather than isolated during physical activity participation. Throughout the unit, students who initially demonstrated hesitation, frustration, or low confidence became increasingly engaged through structured peer interaction and scaffolded gameplay progression. These findings reinforce my belief that motivation and engagement are not fixed student traits but are strongly shaped by instructional design and classroom climate.

Limitations

One limitation of this study involves the theoretical application of Self-Determination Theory. Although the unit intentionally supported competence, relatedness, and autonomy, the findings most strongly reflected competence and relatedness outcomes. Autonomy-supportive practices were present through team creation, gameplay decisions, and student communication

opportunities, but autonomy was not examined as deeply or systematically as the other two psychological needs. Additionally, the study relied primarily on observational evidence and student reflections rather than validated SDT measurement instruments. Future studies could incorporate formal SDT-based surveys or interviews to more directly measure changes in autonomy, competence, and relatedness over time.

A second limitation involves the short duration of the study. The striking unit lasted only five lessons across approximately three weeks, which limited the ability to examine long-term motivational changes or sustained behavioral outcomes. While students demonstrated clear improvements in skill development, cooperation, and engagement during the unit, it is unclear whether these effects would persist across longer instructional periods or transfer into future physical activity participation. Fernández-Espínola et al. (2020) noted that longer cooperative learning interventions often produce stronger motivational outcomes, suggesting that additional instructional time may have led to even greater growth. Future research could examine how semester-long or year-long cooperative instructional models influence long-term motivation, skill retention, and physical activity engagement.

Another methodological limitation is the study's reliance on qualitative observational data collected by the teacher-researcher. Because I served as both instructor and researcher, my interpretations were influenced by my existing relationships with students and my personal investment in the success of the intervention. Although triangulation through mentor feedback, student reflections, and assessment rubrics strengthened credibility, observational bias remains possible. Future studies could strengthen reliability by including additional independent observers, video analysis, or quantitative engagement measures to provide more objective comparisons across lessons.

The study's context also limits transferability. This research was conducted within a single fifth-grade class in a rural Oregon elementary school with an established classroom culture and strong teacher-student relationships developed over two years. Different results may occur in urban settings, secondary PE classes, or classrooms with different demographic, behavioral, or instructional conditions. Additionally, the use of balloon striking activities created a highly accessible and low-pressure environment that may not fully translate to higher-intensity sport units involving greater physical contact, speed, or complexity. Future research should examine whether similar cooperative instructional sequencing produces comparable outcomes across different grade levels, sports, and school contexts.

A practical limitation of the study is that the success of the instructional model relied heavily on intentional scaffolding, classroom management, and consistent reinforcement of cooperative expectations. Cooperative learning alone does not automatically produce positive outcomes. Throughout the unit, communication strategies, conflict-resolution procedures, and behavioral expectations were explicitly taught and reinforced. Teachers with limited instructional time, larger class sizes, or less experience with cooperative structures may find implementation more difficult. Future studies could investigate how teachers adapt cooperative instructional models across varying classroom conditions and identify supports needed for successful implementation.

Finally, the study did not examine individual differences in motivation or prior sport experiences in depth. While observational data suggested that some students benefited significantly from the supportive and cooperative environment, the study did not systematically analyze how factors such as prior athletic identity, gender, disability status, or previous negative PE experiences shaped student engagement. Future research could include student interviews or

case studies to better understand how different groups of students experience cooperative and competitive physical education environments.

Conclusion

This action research project examined how a progressively structured striking unit influenced fifth-grade students' directional striking control, cooperation, engagement, safety, and rule adherence during physical education. Grounded in Self-Determination Theory and cooperative learning research, the study explored how instructional sequencing and classroom climate shape student participation and motivation.

The findings demonstrated that students showed meaningful growth in skill development, communication, fair play, self-regulation, and engagement when instruction progressed from individual skill development to cooperative learning and finally to structured competition. Cooperative learning experiences strengthened relatedness and peer accountability, while scaffolded gameplay opportunities supported competence and confidence. As students developed these foundations, they became increasingly successful in competitive contexts, demonstrating stronger communication, safer participation, and greater independent responsibility.

This study reinforced my understanding that student engagement in physical education is not simply determined by athletic ability or interest in sports. Instead, engagement is strongly influenced by how learning environments are designed and how students experience competence, belonging, and support during participation. Through this project, I learned that competition can become motivating and meaningful when students first experience psychological safety, cooperation, and success within structured learning environments.

Ultimately, this project strengthened my belief that physical education should be designed as an inclusive and humanizing space where all students feel capable of participating, improving,

and contributing. By intentionally structuring instruction to support competence, relatedness, and autonomy, educators can create learning environments that promote not only skill development but also confidence, connection, and lifelong engagement in physical activity.

References

Aelterman, N., Vansteenkiste, M., Haerens, L., Soenens, B., Fontaine, J. R. J., & Reeve, J. (2019). Toward an integrative and fine-grained insight in motivating and demotivating teaching styles: The merits of a circumplex approach. Journal of Educational Psychology, 111(3), 497–521. https://doi.org/10.1037/edu0000293

Bandura, A. (1977). Self-efficacy: Toward a unifying theory of behavioral change. Psychological Review, 84(2), 191–215. https://doi.org/10.1037/0033-295X.84.2.191

Boggs, G. L., & Kurashige, S. (2012, May 31). *The next American Revolution*. De Gruyter. https://www.degruyter.com/document/doi/10.1525/9780520953390/html

Casey, A., & Goodyear, V. A. (2015). Can cooperative learning achieve the four learning outcomes of physical education? A review of literature. Quest, 67(1), 56–72. https://doi.org/10.1080/00336297.2014.984733

Cheon, S. H., Reeve, J., & Vansteenkiste, M. (2019). When teachers learn how to provide classroom structure in an autonomy-supportive way: Benefits to teachers and their students. Teaching and Teacher Education, 90, Article 103004. https://doi.org/10.1016/j.tate.2019.103004

Deci, E. L., & Ryan, R. M. (1985). Intrinsic Motivation and Self-Determination in Human Behavior. New York, NY: Plenum. https://doi.org/10.1007/978-1-4899-2271-7

Deloria Jr., V., & Wildcat, D. (2001). *Power and place: Indian education in America.* Fulcrum Resources.

Derbali, C., Elloumi, A., & Matoussi, F. (2017). The need to learn according to psycho-didactic approach: Self-determination and student's performance in physical education realm. Creative Education, 8(7), 1155–1171. https://doi.org/10.4236/ce.2017.87083

Fernández-Espínola, C., Abad Robles, M. T., Collado-Mateo, D., Almagro, B. J., Castillo Viera, E., & Giménez Fuentes-Guerra, F. J. (2020). Effects of cooperative-learning interventions on physical education students' intrinsic motivation: A systematic review and meta-analysis. International Journal of Environmental Research and Public Health, 17(12), Article 4451. https://doi.org/10.3390/ijerph17124451

Freire, P. (2018). *Pedagogy of the oppressed* (50th anniv.ed.). Bloomsbury Academic.

Gaither, M. (2017b, January 20). *The history of North American education, 15,000 BCE to 1491: History of education quarterly*. Cambridge Core. https://www.cambridge.org/core/journals/history-of-education-quarterly/article/abs/history-of-north-american-education-15000-bce-to-1491/A33464A6EF7AA9B4DF3D6AD66BF9A956

Haerens, L., Aelterman, N., Vansteenkiste, M., Soenens, B., & Van den Berghe, J. (2018). Do perceived autonomy-supportive and controlling teaching relate to intra-individual variability in experiential aspects of the physical education class? Journal of Educational Psychology, 110(6), 875–891. https://doi.org/10.1037/edu0000241

hooks, b. (1994). *Teaching to transgress: Education as the practice of freedom.* Routledge. https://www.taylorfrancis.com/books/mono/10.4324/9780203700280/teaching-transgress-bell-hooks

Howard, J. L., Bureau, J.-S., Guay, F., Chong, J. X. Y., & Ryan, R. M. (2021). Student motivation and associated outcomes: A meta-analysis from self-determination theory. Perspectives on Psychological Science, 16(6), 1300–1323. https://doi.org/10.1177/1745691620966789

Jaakkola, T., Ntoumanis, N., & Liukkonen, J. (2016). Motivational climate, goal orientation, and physical self-perception in youth sport and physical education: A longitudinal study.

Psychology of Sport and Exercise, 24, 86–96. https://doi.org/10.1016/j.psychsport.2016.01.006

Lochbaum, M., & Jean-Noël, J. (2016). Perceived autonomy-support instruction and student outcomes in physical education and leisure-time: A meta-analytic review of correlates. Applied Psychology: Health and Well-Being, 8(3), 326–348. https://doi.org/10.1111/aphw.12074

MacDonald, V.-M. (n.d.). *Latino education in the United States*. SpringerLink. https://link.springer.com/book/10.1057/9781403982803

Ntoumanis, N. (2001). A self-determination approach to the understanding of motivation in physical education. British Journal of Educational Psychology, 71(2), 225–242. https://doi.org/10.1348/000709901158497

Papaioannou, A., Tsigilis, N., Kosmidou, E., & Milosis, D. (2007). Measuring perceived motivational climate in physical education: Psychometric properties of the Greek version of the Learning and Performance Orientations in Physical Education Classes Questionnaire (LAPOPECQ). International Journal of Sport and Exercise Psychology, 5(3), 281–299. https://doi.org/10.1080/1612197X.2007.9671835

Rury, J. L. (2019). *Education and social change: Contours in the history of American schooling* (6th ed.). Routledge. https://www.taylorfrancis.com/books/mono/10.4324/9780429281617/education-social-change-john-rury

Ryan, R. M., & Deci, E. L. (2000). Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. American Psychologist, 55(1), 68–78. https://doi.org/10.1037/0003-066X.55.1.68

Standage, M., Duda, J. L., & Ntoumanis, N. (2003). A model of contextual motivation in physical education: Using constructs from self-determination and achievement goal theories to predict physical activity intentions. Journal of Educational Psychology, 95(1), 97–110. https://doi.org/10.1037/0022-0663.95.1.97

Standage, M., Duda, J. L., & Ntoumanis, N. (2005). A test of self-determination theory in school physical education. British Journal of Educational Psychology, 75(3), 411–433. https://doi.org/10.1348/000709904X22359

Vasconcellos, D., Parker, P. D., Hilland, T., Cinelli, R., Owen, K. B., Kapsal, N., Lee, J., Antczak, D., Ntoumanis, N., Ryan, R. M., & Lonsdale, C. (2020). Self-determination theory applied to physical education: A systematic review and meta-analysis. Journal of Educational Psychology, 112(7), 1444–1469. https://doi.org/10.1037/edu0000420

Zimmerman, B. J., & Schunk, D. H. (Eds.). (2001). Self-regulated learning and academic achievement: Theoretical perspectives (2nd ed.). Lawrence Erlbaum Associates Publishers.