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Effects of Teacher-to-Student Relatedness on Adolescent Male Motivation in Weight-Training Classes

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ABSTRACT

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The purpose of this study was to determine if the motivational profiles of male junior high weight-training students (n = 166) differ across levels of teacher and peer relatedness (high, low). The students' contextual motivation was measured using the Sport Motivation Scale II - Physical Education (SMS II-PE) pre- and post-intervention (high vs. low teacher-to-student relatedness). Situational motivation and relatedness measurements were assessed pre- and post-intervention using the Situational Motivation Scale-Physical Education (SIMS-PE), Amotivation Inventory-Physical Education Scale (AI-PE), and the Interpersonal Behavior Scale (IBS). Results revealed that situational motivation was not affected by the intervention in either group. Significant differences were observed in student's contextual motivation. That is, both within-groups contextual motivation increased. The notion of pre-existing contextual motivation and its relationship to interpersonal behavioral support and situational motivation are presented and explored.

Keywords: self-determination, relatedness, junior high boys, weight-training

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I would like to thank my family for their continued and unfailing support throughout this program. And to Heidi for her dear friendship and patience.

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DESCRIPTION OF THESIS STRUCTURE AND CONTENT

This thesis*, Effects of Teacher-to-Student Relatedness on Adolescent Male Motivation in Weight-Training Classes,* is written in a hybrid format that combines traditional thesis (chapter format) with the requirements specific to a chosen journal. More specifically, to meet university requirements, this document provides (a) preliminary pages (e.g., title page, abstract, acknowledgements, table of contents, list of tables, and list of figures), (b) the journal-formatted article, and (c) appendices. The journal-formatted article is designed to meet specific length and style requirements for submission to *Journal of Teaching Physical Education* (JTPE), with the exception of embedded tables and figures.

The Literature Review (Appendix A) provides additional background and extended coverage of the extant literature specific to examinations of motivation in physical education using Self-determination Theory. Appendix B contains the methods employed in this study. All other appendices (Appendix C through Appendix L) contain samples of consent forms, questionnaires, teacher scripts (the intended manipulation), and various student assignments.

Reference lists for both the journal-formatted article and the literature review, respectively, are included.

Background

Perhaps the most critical element in any educational setting is the teacher who creates the learning environment, designs and delivers the learning activities, interacts with individual students and hopefully is successful in facilitating greater student achievement. Creating a motivationally sound environment has been shown to increase student motivation toward academic activities as well as student learning outcomes (Ames & Archer, 1988; Standage, Duda, & Ntoumanis, 2005). When capable teachers provide a positive, supportive learning environment and activities, students tend to internalize the value and intent of the academic activities and greater performance, cognition, and affect accompany the experience (Pelletier, Fortier, & Vallerand, 1995). The nature of teacher-to-student as well as peer support, then, become invaluable tools to effectively create such learning environments and are the central focus of this study. Self-determination theory (SDT) of motivation will provide the framework for this examination of the effects of teacher-support in an academic setting, specifically in physical education (PE).

Self-determination Theory of Motivation

Self-determination Theory (Deci & Ryan, 1985) has been used over the past three decades to describe a large variety of motivational phenomena and contexts. In its broadest sense SDT makes several postulates: (a) humans have innate social needs to seek a sense of competence, autonomy, and relatedness, in a task; (b) motivational indices lie on a continuum of constructs from amotivation (the absence of motivation) through various levels of extrinsic behaviors to intrinsic behaviors; (c) as the social needs of autonomy, competence and relatedness are fulfilled, motivation becomes more internally regulated (self-determined); (d) as these needs are met and maximized within social contexts, self-determined behavior is fostered and

manifested in increased cognition, affect, and behavior (Deci & Ryan, 1985) (see Figure 1). In addition, SDT operates within three separate levels of generality. The first level is *situational* which accounts for the current state of being or doing. The second, *contextual*, includes life domains such as education or sports. The third, *global*, encompasses personality or life traits. Global is considered to be the most generalized while situational the most specific (Vallerand, 2007) (see Figure 1). Global dispositions are also considered to be the most stable and enduring life traits or attitudes, which guide adult behavior.

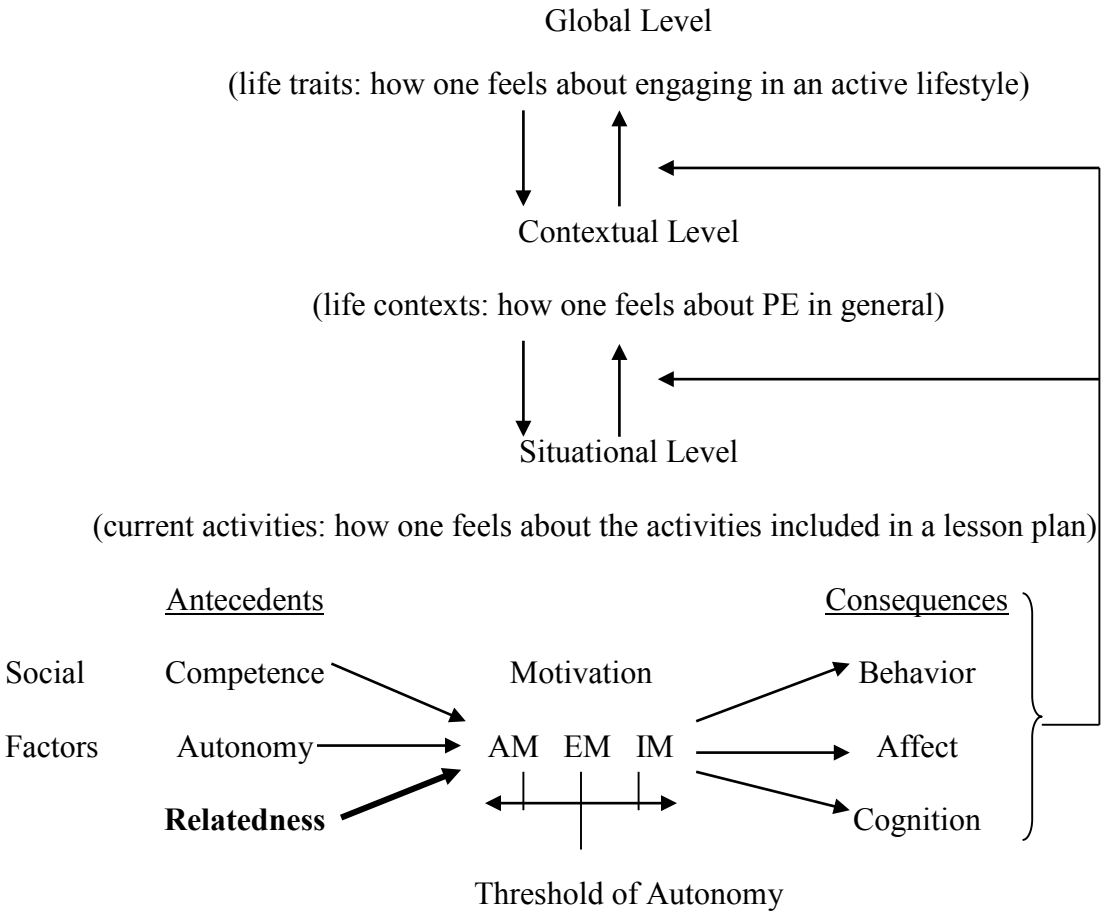

Figure 1. A description of the self-determination theory continuum along with situational,contextual, and global levels of generality. Adapted from "The Effects of Choice on the Motivation of Adolescent Girls in Physical Education," by Prusak, Treasure, Darst, and Pangrazi, 2004, *Journal of Teaching in Physical Education,* 23, p.20.

Contextual dispositions are the next most stable and operate within a particular context such as sports or school domains such as PE. Situational dispositions are the least stable and therefore most malleable and relate to the activities with which one is currently engaged—for example, the daily PE lesson plan. The model further posits top-down as well as bottom-up effects (Guay, Mageau, & Vallerand, 2003), which, when in operation between levels of increasing generality, manifest their effects only after repeated and consistent occurrence. In other words, one's contextual motivation (such as feelings toward PE) can be altered either positively or negatively, but only after repeated and consistent situational effects are experienced. Conversely, it can, for good or bad, exert its own top-down effects on the situational motivation of students in daily PE. Thus Prusak, et al. (2004) posit "this hierarchical framework [may allow] for a refined examination of whether daily practices in physical education lesson plans (i.e., situational) do indeed develop favorable attitudes toward physical education (i.e., contextual) and then toward choosing a physically active lifestyle (i.e., global)" (p.21).

The Multidimensional Nature of Self-determined Motivation

Amotivation is the least autonomous (self-determined) form of regulation because amotivated individuals either do not engage in the activity or engage without internalizing reasons for participating in the activity. Until recently, amotivation has been viewed as a unitary construct while extrinsic- and intrinsic-motivation have long been viewed as multidimensional. Extrinsic motivation (EM), for instance is represented by four constructs including external regulation (the most controlled or least autonomous form of motivation). External regulation is driven primarily by coercion, fear of punishment, or hope for reward. For example, a child is externally regulated when she cleans her room because she fears being punished or perhaps to

earn playtime. Next along the continuum is introjected regulation which involves "taking in but not accepting a regulation as one's own" (Deci, Vallerand, Pelletier, & Ryan, 1991, p. 329). A student regulated by introjection goes to PE for the sake of not letting down one's team or classmates—a form of coercion—or due to pressure-tension resulting from responsibilities beyond self. Next is identified regulation in which the individual values the behavior for his/her self but only as a means to an end. For example, a person participates in swimming lessons because swimming is perceived as a useful skill at some future time. Integrated regulation is the most autonomous of the four EM constructs and involves fully embracing motives that once were external in origin. If a person is motivated by integrated regulation they may conclude that "this is who I am." It is adjacent to intrinsic motivation (IM) because both are self-regulated. A major distinction is that "intrinsic motivation is characterized by interest in the activity itself, whereas integrated regulation is characterized by the activity's being personally important for a valued outcome" (Deci, et al., 1991, p. 330). Internally motivated individuals, on the other hand, engage in an activity for the pleasure they derive from the activity itself.

Amotivation in education. Considering the time and monetary investment in the education of children, educators are constantly concerned with how to "motivate" students (Pintrich, 2003) in order to maximize learning outcomes. For instance, "in their formative first two decades, individuals spend about 15,000 hours in schools. Thus schools represent a primary socializing influence that has enormous impact on the course of people's lives and, in turn, on society" (Deci et al., 1991, p. 325). Not surprisingly, lower school drop-out rates and positive academic performance have been reported when highly self-determined motivational profiles are achieved (Pintrich & de Groot, 1990). Nevertheless, studies reveal an increasing number of high

school students lack volition (i.e., students are increasingly amotivated) in educational pursuits (Legault et al., 2006).

Amotivation is the least studied but perhaps the "most concerning form of motivation, due to various negative mental, physical, and affective outcomes" (Perlman, 2010, p. 433). Perlman (2010) suggests that the paucity of studies on amotivation is, in part, due to the reluctant nature of amotivated students toward participation, making it difficult to conduct meaningful examinations and attain enough data from which to draw conclusions that inform practice. Legault, Green-Demers, and Pelletier (2006) suggests that understanding the causes and remedies for an increasingly amotivated student population ought to be of paramount importance to educational researchers. To this end, they propose that rather than amotivation being viewed as uni-dimensional, it should instead be viewed as multidimensional (Legault et al., 2006). Building upon earlier work of Pelletier, Dion, Tuson, and Green-Demers (1999), Legault et al., (2006) poses four subtypes of academic amotivation based upon ability beliefs, effort beliefs, value placed on the task, and characteristics of the task. *Ability beliefs* describe students who do not believe they are competent at a task and therefore are likely to disengage. *Effort beliefs* describe students who lack the desire to invest the energy necessary to complete the task, although they may in fact be competent at performing the task. Some students simply do not *value* the task enough to engage. Still others find the *characteristics of the task* unappealing finding little pleasure in their performance.

Social needs support in PE. Competence support is fostered by teachers conveying information in a way that the student feels competent (capable) of completing the class requirements. Autonomy support is fostered "when students feel a sense of choice and personal control in a task" (Prusak et al., 2004, p. 26). Relatedness support is fostered when students

develop beneficial relationships with others. As a result, student intrinsic motivation increases (Legault et al., 2006). In addition, all three types of social support are negatively associated with all four subtypes of amotivation. That is, as classroom autonomy, competence, and relatedness support increase, amotivation decreases (Legault et al., 2006). Indeed, competence and relatedness support have recently been negatively associated with amotivation in the PE setting (Shen, Weidong, Sun, & Rukavina, 2010).

Relatedness studies are most often conducted in consideration of teacher-to-student relationships (Furrer & Skinner, 2003). For this study, relatedness was "[defined] by school climate, quality of teacher-student relationships, feelings of belonging, caring, inclusion, acceptance, importance, and interpersonal support" fostered by the teacher (Shen, McCaughtry, Martin, Fahlman, & Garn, 2012, p. 231). Recently, Shen et al. (2012), in a cross sectional study provided evidence that motivational profiles in high school girls are positively affected by increases in teacher-to-student relatedness. However, despite its proposed importance, teacher-to-student relatedness has yet to be studied in an experimental design with it as the primary manipulation. To do so presents several distinct challenges including (a) controlling for prior perceptions of student relationships with teachers, (b) manipulating relatedness while retaining appropriate instructional practices, and (c) achieving desired learner outcomes. To do otherwise would not be ethical. Creating an intervention that addresses these ethical considerations is very difficult and perhaps is one reason there are so few relatedness studies.

Given the paucity of relatedness studies and that relatedness research in PE has been primarily limited to female students (Shen et al., 2010; Shen et al., 2012), the relationship between motivation and relatedness support for males remains unclear. Similar research on male students is warranted and may provide additional insight. The purpose of this study was to assess

the effects of levels of teacher-to-student relatedness support on the motivation of male PE students in weight-training classes. It was hypothesized that students in the high-relatedness group would reveal higher levels of situational motivation than those in the self-guided group.

Method

Context

The present study was conducted in three junior high schools in the Intermountain West. The first school serves 1264 (675 male and 589 female) seventh-to ninth- grade students with a majority of students being Caucasian and Hispanic from middle to middle-upper class socioeconomic backgrounds. The second school serves 1086 (530 male and 556 female) seventh- to ninth- grade students with a majority of students being Caucasian and Hispanic from middle to middle-upper class socioeconomic backgrounds. The third school serves 956 (475 male and 481 female) seventh-to ninth- grade students with a majority of students being Caucasian and Hispanic from middle-class socioeconomic backgrounds.

Participants

Participants were seventh, eighth, and ninth, grade boys ($N = 166$) enrolled in weight-training classes from each of the three schools. Each student received and returned signed letters of consent/assent forms approximately two weeks before the study began.

Measures

A modified (referencing PE instead of sport) version of the 18 item, 6 subscale, Sport Motivation Scale II (SMS II-PE) was used to measure intrinsic motivation (IM), extrinsic motivation (EM), and amotivation (AM) (Pelletier, Rocchi, Vallerand, Deci, & Ryan, 2013) at the contextual level. The stem states, “Why do I participate in physical education/weight-training?” Students responded to 18 statements on a 7-point Likert scale wherein “Corresponds

not at all" = 1 and "Corresponds exactly" = 7. For example, they responded (a) "because it gives me pleasure to learn more about the activity" or (b) "because I would not feel worthwhile if I did not." Used in this study to assess any preexisting dispositions toward PE, this scale assesses the motivational dispositions of students toward physical education in general.

Situational intrinsic motivation. A modified version of the 16 item, 4 subscale Situational Motivation Scale (SIMS-PE) was used to measure motivation at the situational level (Guay & Vallerand, 2000). The stem states, "Why are you currently participating in this body conditioning unit?" Students responded to 16 items on a 7-point Likert scale. For example, they responded that they were participating in the current activities (a) "because I think that this activity is interesting" or (b) "because I don't have a choice."

Amotivation. A modified (to include weight-training) version of the 16 item, 4 subscale Amotivation Inventory (AI-PE) was used to measure amotivation (Shen, Winger, Li, Sun, & Rukavina, 2010). The stem states, "I don't participate in weight-training (WT) activities… Students responded to 16 items on a 7-point Likert scale. For example, they responded that they didn't participate in the current activities (a) "because, for me, WT holds no interest" or (b) "because I'm not good at WT."

Relatedness support. A modified (suitable for weight-training) version of the 12 item, 3 subscale Interpersonal Behavioral Scale (IBS) was used to measure perceptions of competence, autonomy and relatedness support (Pelletier, Beaudry, Sharp, & Otis, in press). Students responded to 12 statements on a 7-point Likert scale wherein "Never" =1 and "Always" = 7. For example, "I feel that my WT teacher sincerely cares about me" or (b) "My WT teacher does not care if I succeed or fail.

Data Analysis

Subscale means and standard deviations for each questionnaire (SMS II-PE, SIMS-PE, AI-PE, and IBS) were calculated. Specifically, raw scores from each of the 18 items of the SMS II-PE were reduced to six subscale means by averaging the raw scores from their three corresponding items. Similarly, the 16 items of the SIMS-PE were reduced to four subscales by averaging their four corresponding items. Likewise, the 16 items of the AI-PE were reduced to four subscales by averaging their four corresponding items. Finally, the 12 items of the IBS were reduced to four subscales by averaging their 3 corresponding items. All subsequent analyses were conducted using these subscale means.

Procedures

All study procedures received university's Institutional Review Board and district approval as well as approval from the principals of the schools in which the study was conducted. Each participating teacher was male with an average of three years teaching experience. The principle researcher of the present study was one of the participating teachers. All three participating teachers assembled for script training in early August of 2013. The teacher script training was designed to help all participating teachers understand the theoretical framework and purpose of the intervention. The meeting included discussing specifics about the teacher's role in both treatment groups, the dissemination and collection of data, and the curriculum timeline. Teachers were given printed copies of all scales, assignments, CDs, and DVDs necessary for the intervention. Following the script training, additional follow-up (via phone conversation, email, and text messaging) continued through the entire data collection process. In early September, the principal researcher distributed consent/assent forms to each of the teachers who distributed the forms to each of the students. One week prior to the

intervention, the teachers distributed the SMS II-PE survey to students in the class to measure students' pre-existing contextual motivation toward PE. The intervention occurred during two weeks beginning in the second week of September 2013. Treatment groups were differentiated between distal ends of accepted teaching practices. For example, one group contained high teacher-centered instruction and the other high student-centered (see Mosston, 2002).

The high teacher-centered instruction (i.e., "command style") was chosen for the high-relatedness group in order to get the teachers heavily involved in the instruction process. It was intended that teachers interact with as many students as possible and as frequently as possible through each phase of the lesson plan, thus creating an environment where students were dependent upon the teacher for instruction, feedback, and support. Contrastingly, the self-directed group learned using a modified form of Mosston's "self-teaching" style that removed the teacher from the learning, causing the students to rely on their own efforts or that of classmates to direct their learning. For example, when a student in the high-relatedness group asked a question, the teacher clearly answered the question. In the self-directed group, students asking similar questions were directed to a poster to discover the answer for themselves. This was a modified version of "self-teaching" as the student was provided the content and direction for what to learn (by the teacher) and did not decide everything about learning something new. The self-teaching form of instruction was chosen to give students the opportunity to guide their own learning while having the least possible interaction with the teacher.

The same two week unit of instruction was taught to one of two treatment groups: (a) low-relatedness: self-guided individual instruction and (b) high-relatedness: instruction with high levels of teacher-to-student relatedness.

On Day 1 of the intervention the weight-training unit was introduced. A lesson on flexibility was taught and the AI-PE and IBS surveys were administered. On Day 2 a lesson on kickboxing was taught and the SIMS-PE survey was administered. On Days 3 through 10 students participated in and completed assignments for various body-conditioning lessons. On Day 9 the SIMS was again administered. On Day 10 the AI-PE and IBS were again administered. One week following the intervention the SMS II-PE was again administered to all students. Each treatment group consisted of four intact weight-training classes. Surveys were administered pre and post-intervention to all students in both treatment groups. Surveys were recorded by a team of research assistants and rechecked visually for missing data or keystroke errors. The resulting data set, $N = 166$, was used for subsequent analysis. All surveys were proctored using the same set of instructions that were read prior to each survey. Each survey has demonstrated acceptable levels of validity and reliability (Briere, Vallerand, Blais, & Pelletier, 1995; Guay & Vallerand, 2000).

Results

Motivational Responses

Contextual motivation. Group means, standard deviations, and effect sizes for SMS II-PE are shown in Table 1**.** Unexpectedly, there were significant pre-existing differences between groups in contextual motivation (via SMS II PE), indicating that the self-directed group began the intervention (a) more intrinsically motivated on a contextual level, $F(1,159) = 4.690$, $p < .05$; (b) had a higher sense of integrated regulation on a contextual level, $F(1,162) = 7.264$, $p < .05$; (c) felt more externally regulated on a contextual level, $F(1,162) = 6.772$, $p < .05$. Thus pre-existing conditions were statistically controlled in all subsequent analyses. Surprisingly, after pre-existing conditions were controlled, and the intervention was implemented, the self-directed group means for the more positive motivational indices (IM, INR, IDR, IR) were higher than the

high-relatedness group (Table 1). However the self-directed group also scored higher in the ER and AM constructs. This indicates that after the intervention the self-directed group (a) felt more intrinsically motivated, $F(1,158) = 7.017$, $p < .05$; (b) felt a higher sense of integrated regulation, $F(1,162) = 8.932$, $p < .05$; (c) felt a higher sense of identified regulation, $F(1,160) = 6.543$, $p < .05$); felt a higher sense of introjected regulation, $F(1,158) = 8.383$, $p < .05$; felt more externally regulated, $F(1,162) = 6.986$, $p < .05$; and felt more amotivated $F(1,163) = 7.085$, $p < .05$.

Situational motivation response. Group means, standard deviations, and effect sizes for SIMS-PE are shown in Table 1. Pre-intervention, the two groups differed significantly with respect to IR, ER, and AM but not IM. However, there were no significant differences between groups or within trials post-intervention.

Amotivation response. Group means, standard deviations, and effect sizes for AI-PE are shown in Table 1. No significant differences were found between groups or within trials.

Needs support response. Group means, standard deviations and effect sizes for IBS are shown in Table 1. No significant differences were found between groups or within trials.

Reliability and Internal Consistency

Internal consistency of the SMS II-PE, SIMS-PE, AI-PE and IBS scales was assessed using Cronbach's α (Cronbach, 1951). All subscales from all four instruments ranged from .65 to .94. Acceptable reliability scores are generally considered to be $\geq .7$ (Cronbach, 1951) (see alphas on diagonals of Tables 2-5).

The subscale correlations generally support the simplex pattern of the SMS II-PE. It is asserted that intrinsic motivation (IM) integrated regulation (INR), identified regulation (IDR), introjected regulation (IR), External Regulation (ER), and amotivation (AM) lie on a continuum.

Table 1

Means and Standard Deviations and Effect Sizes for Low and High-Relatedness Groups on 8 Questionnaires and 16 Subscales

	Low Relatedness		High Relatedness		
Subscale	*M*	*SD*	*M*	*SD*	*ES*
SMS II-PE 1 IM	4.98**	1.5	4.47	1.5	0.34 †
INR	4.12**	1.4	3.52	1.5	-0.240 †
IDR	4.89	1.3	4.56	1.6	0.225 †
IR	3.25	1.4	3.09	1.4	0.114 †
ER	2.20**	1.5	1.69	.89	0.411 ††
AM	2.13	1.4	1.84	.96	0.240 †
SMS II-PE 2 IM	5.36**	1.5	4.70	1.7	0.411 ††
INR	4.46**	1.6	3.68	1.7	0.472 ††
IDR	5.30**	1.5	4.65	1.7	0.404 ††
IR	4.00**	1.5	3.30	1.5	0.466 ††
ER	2.55**	1.8	1.94	1.2	0.399 †
AM	2.40**	1.7	1.82	1.0	0.417 ††
SIMS-PE 1 IM	5.49	1.3	5.18	1.3	0.238 †
IR	5.70**	1.2	5.23	1.4	0.361 †
ER	2.72**	1.6	2.03	1.1	0.501 ††
AM	2.08**	1.5	1.71	.83	0.30
SIMS-PE 2 IM	5.10	1.5	5.10	1.4	0.00
IR	5.43	1.4	5.26	1.4	0.121
ER	2.52	1.6	2.10	1.3	0.289
AM	2.00	1.2	1.77	1.1	0.200
AI-PE 1 Abl	1.60	.88	1.68	.86	-0.09
Eff	1.61	.88	1.83	.91	-0.245
Val	1.47	.88	1.55	.80	-0.095
Tsk	1.61	.91	1.67	.92	-0.065
AI-PE 2Abl	1.56	.98	1.74	1.0	-0.181
Eff	1.72	1.0	1.83	.94	-0.113
Val	1.48	.79	1.50	.68	-0.027
Tsk	1.76	1.2	1.79	1.0	-0.03
IBS 1 AS	5.11	1.3	5.29	1.0	-0.155
CS	5.47	1.2	5.77	1.0	-0.272
RS	5.44	1.3	5.56	1.0	-0.103
IBS 2 AS	5.24	1.4	5.29	1.3	-0.037
CS	5.54	1.0	5.73	1.2	-0.171
AS	5.3	1.3	5.70	1.2	-0.319

Note. †† Medium Effect Size. †Small Effect Size. $ES = (M_1 - M_2)/SD_{pooled.}$

**Significant correlations $p < .05$

While this relationship pattern is consistent throughout the SMS II-PE (see Table 2, above and below diagonal), the distal relationships never reveal a negative correlation as with the original version of the SMS-PE used in Prusak et al. (2004). The absence of a pronounced simplex pattern, the marginally acceptable alphas (IR$\alpha_{1,}$ α_2 and AMα_1) and the unexpected preexisting between group differences in SMS II-PE 1, may lead the readers to question the suitability of the SMS II-PE for this setting and should interpret data with caution.

Table 2

SMS II-PE Correlations and Cronbach's Alphas

Subscales	IM	INR	IDR	IR	ER	AM
IM	.80, .85	.65**	.66**	.51**	.23**	.15
INR	.65**	.76, .85	.74**	.62**	.42**	.37**
IDR	.53**	.64**	.74, .86	.64**	.26**	.19*
IR	.39**	.59**	.47**	.65, .69	.59**	.47**
ER	.23**	.53**	.20*	.65**	.75, .79	.81**
AM	.18*	.42**	.14	.49**	.75**	.69, .76

Note. Correlations for SMS 1 are located below diagonal and for SMS 2 are located above diagonal. Cronbach alphas are located along the diagonal (α_1, α_2). **Correlation is significant at the 0.01 level. *Correlation is significant at the 0.05 level.

Table 3 contains the correlations between subscales of both SIMSPE 1 (below diagonal) and SIMSPE 2 (above diagonal) depicting the increasingly negative relationship for both trials. However, the simplex pattern is very much more pronounced in the SIMSPE 2. Correlations in top row in Table 1 indicate that while IM is moderately positively related to IR, it is increasingly negatively related with ER and AM. Note also that the Cronbach alphas indicate that high

internal consistency among subscale items across both trials. Thus, we can conclude that the SIMS-PE held up very well for use with this population.

Table 3

SIMS-PE Correlations and Cronbach's Alphas

Subscales	IM	IR	ER	AM
IM	.82, .86	.66**	-.16	-.26**
IR	.73**	.80, .80	-.17	-.21*
ER	-.11	-.06	.81, .85	.70**
AM	.00	-.01	.64**	.80, .78

Note. Correlations for SIMS-PE 1 are located below diagonal and for SIMS-PE 2 are located above diagonal. Cronbach alphas are located along the diagonal (α_1, α_2).**Correlation is significant at the 0.01 level. *Correlation is significant at the 0.05 level.

Table 4 contains the correlations and alphas for the AI-PE. As expected, the four types of amotivation are moderately correlated with one another. There is no proposed ordering for these subscales. Rather, each subscale provides insight into the nature of student amotivation. The subscale alphas indicate an acceptable level of internal consistency across trials. It appears that this scale is suitable for use with this population.

Table 5 contains the subscale correlations and alphas for the IBS for both trials. As expected, perceptions of support for autonomy, competence and relatedness are moderately and positively correlated with one another. As with the AI-PE, there is not proposed order among these subscales. Notable is the marginally acceptable internal consistency in competence support in both trials (CSα_1 and CSα_2). Despite this, the IBS appears to be an appropriate instrument for use in this setting.

Table 4

AI-PE Correlations and Cronbach's Alphas

Subscales	Ability	Effort	Value	Task
Ability	.77, .85	.76**	.60**	.62**
Effort	.74**	.78, .80	.59**	.67**
Value	.68**	.66**	.80, .70	.68**
Task	.64**	.71**	.67**	.86, .87

Note. Correlations for AI-PE 1 are located below diagonal and for AI-PE 2 are located above diagonal. Cronbach alphas are located along the diagonal (α_1, α_2). **Correlation is significant at the 0.01 level. *Correlation is significant at the 0.05 level.

Table 5

IBS1 and IBS 2 Correlations and Cronbach's Alphas

Subscales	AS	CS	RS
AS	.78, .84	.79**	.82**
CS	.73**	.65, .68	.74**
RS	.73**	.69**	.70, .77

Note. Correlations for IBS 1 are located below diagonal and for IBS 2 are located above diagonal. Cronbach alphas are located along the diagonal (α_1, α_2). **Correlation is significant at the 0.01 level. *Correlation is significant at the 0.05 level.

Discussion

The purpose of this study was to examine the effects of changes in teacher-to-student relatedness on the motivation of adolescent males in a junior high school weight training class. Using a quasi-experimental design, the researcher sought to create a sufficiently strong manipulation of teacher-to-student relatedness without sacrificing the quality of the learners'

educational experience and learning outcomes. Thus, students were subjected to two conditions, high-relatedness in which teachers maintained high levels of personal interaction with their students, and low-relatedness in which students engaged in individualized, self-directed learning. Student preexisting contextual motivational perceptions of PE were assessed in order to identify and control for, if found.

Contextual Motivation Findings

The reason for using the SMSII-PE is that the researcher had to have a measure to test whether there were any pre-existing conditions between the treatment groups. This was done because it was not possible to randomly assign students to one of two groups. Though intact classes were randomly assigned to either group, it could not be assured that they were drawn from the same population. Therefore the researcher used the SDT contextual motivation instrument (SMS II-PE) to assess any possible preexisting differences. Although none were expected, some were found. This is most likely due to the nature of the instrument rather than any actual pre-existing differences. Nonetheless, those items were covaried for which differences were noted. Caution is recommended in placing too much importance on this contextual measure as the short nature of the intervention (10 days) is generally not likely to reveal any pre or post contextual motivational differences. Perhaps this instrument ought to undergo further psychometric testing and possibly refinement for use in this population.

Difficulty of Relatedness Interventions

A significant challenge to this study was the difficult nature of *interventional* relatedness studies in general. Compared to studies examining competence and autonomy support in PE, only a few relatedness studies exist in PE (see Shen et al., 2010; Shen et al., 2012) and those being conducted use a cross-sectional design. Few, if any, PE intervention studies have been conducted in which relatedness was the primary manipulation. This is likely because establishing

a control group presents a challenge to the researcher. Within the context of self-determination, relatedness denotes a positive experience between significant others (Shen et al., 2012). Therefore, the opposite of relatedness, by definition, would be to expose students to a negative school climate including negative teacher-to-student relationships. Moreover, of necessity, the environment would discourage feelings of belonging, caring, inclusion and acceptance while simultaneously decreasing student's feelings of importance and interpersonal support. Such ethical issues appear to be insurmountable barriers for a researcher to establish an authentic relatedness control group.

Possible Autonomy Counter-effect

Though not significant, the self-directed group seemed to be trending in increased situational motivation (see means Table 1 SIMS IM, IR). It is therefore possible that in an effort to create a low-relatedness group and remain ethically bound, the researcher designed an intervention which inadvertently elicited a response to the increase in autonomy, creating a counter-effect which led students in the self-directed group to feel a greater sense of autonomy than the high-relatedness group. Perhaps the more "hands-off" teaching style was a welcome change for the students. Previous studies have indicated the import of student's perceived autonomy in developing enhanced intrinsic motivation in the classroom (e.g., Prusak et al., 2004). Additionally, competence and autonomy are considered to be of greater consequence than relatedness with respect to intrinsic motivation (Deci & Ryan, 2000).

Social Needs Support

It may also be revealing to note that although differences were not significant, the high-relatedness group appeared to begin to sense more needs support from their teachers (see Table 1 means, SD, and effect sizes for both groups on IBS 1). This may indicate that within the short

duration of the intervention (10 school days) students began to take note of the teacher paying more or less personal attention to them. Nevertheless, the possible perceived change (increase for self-directed and decrease for high-relatedness) in the student's autonomy appeared to have more effect upon the students internally-originated motivation than did teacher-to-student interaction (see Deci & Ryan, 2000).

Several indicators also suggest that the teachers had already established healthy relationships with their students before the intervention. The weight-training classes in this study are elective classes and it is quite possible that preexisting positive feelings toward the teacher led students to enroll. Furthermore, the pre-intervention mean score of all participants on the IBS scale (measuring perceived competence, autonomy, and relatedness support) was relatively high (5.5 on a 7-point Likert Scale,) suggesting students had already formed positively stable opinions of their teachers.

Since contextual motivation is considered more stable than situational motivation (Vallerand, 2007), previous opinions of students toward their teacher and weight-lifting in general would likely change only with repeated and consistently negative situational experiences. Consequently, students may be able to endure 10 days of little to no interaction with their teacher and still maintain positive feelings toward the teacher. While other studies have shown relatively immediate responses to manipulations in situational autonomy (e.g., Prusak et al., 2004; Ward, Wilkinson, Graser, & Prusak, 2008) and competence (e.g., Tao, Solomon, Xiangli, 2012), this study seems to indicate that relatedness is less quickly manipulated. Similar relatedness studies with longer intervention periods (e.g., semester or full year) may increase our knowledge of the impact of relatedness on both situational and contextual motivation.

Conclusions

Even though the teachers were much more engaging and interactive in the high-relatedness group, ultimately the instruction was still teacher-centered, leaving the students to possibly begin to feel slightly more relatedness with the teacher but at the expense of their autonomy. When taken in context with the extant literature, the results of this study may indicate that teachers should not only strive to build healthy rapport with their students but must do so without undermining their sense of autonomy (see Mosston, 2002). It may be important for teachers to ensure that teacher-centered instruction (however supportive or entertaining) is delivered sparingly and intermittently within a cushion of student-centered learning activities which allow for more individualized feedback and interaction between students and their teacher. It seems therefore essential that teachers take care in meeting all the social needs of students rather than isolating one or two of those needs apart from the others. Relatedness support alone may be difficult to measure because as Shen et al. (2010) states, "a relatedness-supportive teacher is the one who demonstrates democratic interaction styles [which implies autonomy support], develops expectations for student behaviors in light of individual differences, models a 'caring' attitude toward their own work, and provides constructive feedback" (Shen et al., 2010, p. 428).

Limitations

The limitations of this study center on the fact that the participants were all boys. It does not address the female population in single-sex classes or both sexes in coed classes. Furthermore, classes were all elective rather than required.

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APPENDIX A

Expanded Review of Literature

Self-determination Theory (SDT) (Deci & Ryan, 1985) has been used for the past three decades to describe a large variety of motivational phenomena and contexts; couple happiness (Blais, Sabourin, Boucher, & Vallerand, 1990), perceptions about God (Soenens, Neyrinck, Vansteenkiste, Dezutter, Hutsebaut, & Duriez, 2012), politics (Losier, Perreault, Koestner, & Vallerand, 2001), business (Kasser, Kanner, Cohn, & Ryan, 2007), and education (Guay, Ratelle, & Chanal, 2008) have all been studied within its philosophical lens.

Self-determination Theory is emerging as the dominant motivational theory in physical education. Its original authors, Edward Deci and Richard Ryan, define motivation as follows: "To be motivated means to be moved to do something. A person who feels no impetus or inspiration to act is thus characterized as unmotivated, whereas someone who is energized or activated toward an end is considered motivated" (Ryan & Deci, 2000, p. 54). Physical educators are consistently presented with the challenge of how to motivate students to "be moved to do something." As Ryan and Deci continue, "practitioners of all types face the perennial task of fostering more versus less motivation in those around them" (Ryan & Deci, 2000, p. 54). Yet SDT examines motivation not just by amounts but types. In other words, SDT considers that students may have different types of motivation for their actions. For example, a student may complete school work out of interest or because they seek praise from their parents (Ryan & Deci, 2000).

In its broadest sense SDT makes several postulates: (a) humans have innate social needs to seek a sense of competence, autonomy, and relatedness, in a task; (b) motivational indices lie on a continuum of constructs from amotivation (the absence of motivation) through various levels of extrinsic behaviors to intrinsic behaviors; (c) as the social needs of autonomy,

competence and relatedness are fulfilled, motivation becomes more internally regulated (self-determined); (d) as these needs are met and maximized within social contexts, self-determined behavior is fostered and manifested in increased cognition, affect, and behavior (Deci & Ryan, 1985) (see Figure 1).

In addition, Vallerand (2007) separated SDT into three levels of generality: situational (current state of being or doing), contextual (life domain such as education) and global (personality or life traits) with global being the most generalized and situational being the least generalized (see Figure 1).

Vallerand (2007) considers global dispositions to be most stable and enduring life traits or attitudes, which guide adult behavior. Contextual dispositions, the next most stable, operate within a particular context such as sports or school. Situational dispositions (least stable), relate to the activities with which one is currently engaged. In addition, Vallerand (2007) also suggests that the model posits top-down as well as bottom-up effects, which when in operation between levels of increasing stability manifest their effects only after repeated and consistent occurrence. In other words, one's contextual motivation (such as feelings toward PE) can be altered either positively or negatively, but only after repeated and consistent situational effects are experienced. This hierarchical framework is significant because it posits that daily lesson plans in PE contribute to the student's overall attitude about PE and may lead students to a healthy and active lifestyle (Guay, Mageau, & Vallerand, 2003; Prusak, Treasure, & Darst, 2004).

Self-Determination Theory Continuum of Motivation

Amotivation is the least self-determined form of regulation. Amotivated individuals either do not engage in an activity or engage without internalizing reasons for engaging in the activity. Until recently, amotivation has been viewed as a unitary construct while extrinsic and

intrinsic-motivation are viewed as multidimensional. Extrinsic motivation (EM), represented by four constructs including external regulation (the most controlled or least autonomous form of motivation) is driven primarily by fear of punishment or hope for reward. For example, a child is externally regulated when she cleans her room because she fears being punished or to earn playtime. Introjected regulation, the next along the continuum involves "taking in but not accepting a regulation as one's own" (Deci, Vallerand, Pelletier, & Ryan, 1991, p. 329). An employee regulated by introjects goes to work for the sake of not feeling guilty—a form of internal coercion—or due to pressure-tension resulting from responsibilities beyond self (such as welfare of family). In identified regulation, the next along the continuum, the individual values the behavior but only as a means to an end. An example is when a person participates in swimming lessons because swimming may be helpful at some future time. Integrated regulation is the most autonomous of the four EM constructs. It is comparable to intrinsic motivation (IM) because both are self- regulated. A major distinction is that "intrinsic motivation is characterized by interest in the activity itself, whereas integrated regulation is characterized by the activity's being personally important for a valued outcome" (Deci et al., 1991, p. 330). Internally motivated individuals, on the other hand, engage in an activity for the pleasure they derive from the activity itself and is characterized by IM-to know, -to feel stimulation, or -toward accomplishment.

Self-Determination Theory in Education

Considering the time and monetary investment in the education of children, educators are constantly concerned with how to "motivate" students (Pintrich, 2003) in order to maximize learning outcomes. For instance, "in their formative first two decades, individuals spend about 15,000 hours in schools. Thus schools represent a primary socializing influence that has

enormous impact on the course of people's lives and, in turn, on society" *(*Deci et al., 1991, p. 325). Not surprisingly, school retention and positive academic performance have been reported when self-determined forms of motivation are achieved (Pintrich & de Groot, 1990). Nevertheless, studies reveal an increasing number of high school students lack volition (i.e., increasingly amotivated students) in educational pursuits (Legualt, Green-Demers, & Pelletier, 2006).

Amotivation is the least studied but perhaps the "most concerning form of motivation, due to various negative mental, physical, and affective outcomes" (Perlman, 2010, p. 433). Perlman (2010) suggests that the paucity of amotivational studies is due to the reluctant nature of amotivated students toward participation making it difficult to attain enough data.

Legault et al. (2006) and her colleagues recognized that several studies have used SDT in analyzing student's motives in the pursuit of academic achievement (either extrinsic or intrinsic) yet very little research has been done to explore amotivation within academic circles. This is a problem they pose, because many students lack academic motivation (Legault et al., 2006). They opine that rather than looking at educational amotivation as a one-dimensional construct (general helplessness) as the original theory postulates, academic amotivation instead should be viewed as a multidimensional construct. The authors build upon earlier work (Pelletier, Dion, Tuson, & Green-Demers, 1999) when amotivation was first suggested to be a multidimensional construct and adapt it to the educational setting. They pose four subtypes of academic amotivation based upon ability beliefs, effort beliefs, value placed on the task, characteristics of the task. Ability beliefs describe students who do not believe they are competent at a task and therefore are likely to disengage. Effort beliefs describe students who lack the desire to invest the energy required to complete the task, although they may in fact be competent at performing the

task. Other students simply do not value the task enough to engage in it. Still others do not identify with the characteristics of the task and consequently find little pleasure in performing the task. A clearer understanding of these amotivational subtypes sheds further light in determining *why* students fail to engage in a task rather than just observing *when* students fail to engage. However, while this study increases the current understanding of academic amotivation, no ordering of amotivational subtypes (as in extrinsic motivation) has been explored.

Social needs support. Legault et al. (2006) further defines three different types of social support. The first, autonomy support is fostered when teachers integrate choice into the classroom and give students personal responsibilities and freedoms (Prusak et al., 2004; Ward, Wilkinson, Graser, & Prusak, 2008). The second, competence support, is fostered by teachers conveying information in a way that the student feels competent (capable) of completing the class requirements (Legault et al., 2006). The third, relatedness support, is fostered when students "develop enriching relationships with others and when they feel that key social figures really care about them" (Legault et al., 2006, p. 570). Furthermore, "students who perceive their social support networks (e.g., parents and teachers) as supporting and fueling their autonomy and competence are more intrinsically motivated at school" (Legault et al., 2006, p. 570).

Thus, relatedness support may be viewed as the catalyst for the other two social supports. In the third of three studies published by (Legault et al., 2006) the researchers used 741 Canadian high school students (375 girls, 361 boys, and 5 who did not indicate their gender). Students ranged from 12 to 19 years in age (M = 14). Participants filled out questionnaires at school. The study concluded that all three types of social support are negatively associated with all four subtypes of amotivation. That is, as autonomy, competence and relatedness support increased, amotivation decreased. It was determined as well that gender was not a determinant in any of the

subtypes of amotivation. As part of their conclusion, the authors point out "although the bulk of the research in self-determined academic motivation has focused on autonomy support, the results herein suggest a movement toward the social climate of relatedness and an exploration of the role of affiliation in fostering academic interest and values" (Legault et al., 2006, p. 579).

Two years after the foregoing study by Legault et al. (2006) a replicated study (Green-Demers, Legault, Pelletier, & Pelletier, 2008) was employed with respect to the four amotivational subtypes but with a much larger sample size. Once again, the results indicated that academic amotivation could indeed be beneficially divided into four subtypes. The 2008 study consisted of 3,417 Canadian high school students. Students were 12 to 18 years old, with the average age being 14. Only one amotivation subtype showed gender differences-effort beliefs. Boys believed they could express less effort in school tasks. For all other subtypes, no gender differences were observed. Additionally both genders exhibited increased amotivation over grade. That is, as the students got older, their motivational profiles declined.

Even less research concerning amotivation has occurred in Physical Education. In recent years Shen et al. (2010) applied Green-Demers et al. (2008) multidimensional construct to the Physical Education setting. Shen et al. (2010) questioned the relationship between amotivation and teacher-to-student social support. Using the three previously mentioned types of social support (autonomy, competence, relatedness support) the authors "investigated (a) the extent to which different kinds of perceived social support deficiencies could yield different subtypes of amotivation in physical education; and (b) the extent to which the subtypes of amotivation could predict subsequent outcomes"(Shen et al., 2010, p. 419). They hypothesized that a lack of the three teacher-to-student social supports would contribute to each of the four amotivational subtypes in a physical education class setting. This study was comprised of 566 ninth-graders

(300 boys and 266 girls ranging from 14 to 16 years of age). Instruments for the study included the Amotivation Inventory-Physical Education (AI-PE) as adapted by Shen, Winger, Li, Sun, and Rukavina, (2010) to examine reasons for student's declination to participate in PE. In addition, the Interpersonal Behavior Scale (IBS) assessed teacher's social support toward their students. Guided by the belief that amotivation could be broken down to four subtypes and then applied to the PE setting, the authors discovered that in terms of the three types of social support, the lack of competence support was the strongest predictor of amotivation. No direct results pertaining to amotivation were found through lack of autonomy support. Relatedness support was a predictor of deficient ability beliefs and insufficient values. Interestingly, the authors state that "Those students who felt unimportant or ignored by teachers were more likely to suspect their ability and wonder the reasons why they should participate in physical education" (p. 427). The authors also provide valuable insight into the necessity of extending the research in relatedness support. "Given the crucial but yet often unrecognized importance of interpersonal affiliation [teacher-to-student relatedness] in motivating students, further investigating the impact of social affiliation on competence and values is necessary" (p. 427).

Carson and Chase (2009) extended SDT research to physical education teachers. They found that physical education teacher's motivational profiles became significantly more self-determined when competence, autonomy, and relatedness support needs were met. This study is extremely relevant as it extends motivation to physical education teachers as well as students. Thus, the links between teacher motivation and student self-determination for learning can be more fully explored.

Relatedness defined and explored. Educational research involving children's relationships with teachers (Stipek, 2002) and peers and its impacts on student motivation is not

new. In fact, relatedness support has "been linked to important academic outcomes, including self-efficacy…engagement, interest in school, task goal orientation" (Furrer & Skinner, 2003, p. 149). Relatedness studies are most often considered in light of student relationships with teachers (Furrer & Skinner, 2003). Ryan et al. (1994) further highlighted the importance of teacher to student relatedness on academics. Moreover, they held that peer relatedness mostly influenced nonacademic events. Wentzel termed teacher-to-student relationship as "pedagogical caring" (, 1997).

Observing that teacher and peer relatedness is "crucial" but frequently overlooked, especially in physical education, studied relatedness in a group of high school girls physical education students. As defined here, relatedness is "measured by school climate, quality of teacher-student relationships, feelings of belonging, caring, inclusion, acceptance, importance, and interpersonal support" (Shen et al., 2012, p. 231). In this study, the authors focused on "how students' relatedness toward teachers and peers predicted urban high-school girls' behavioral and emotional engagements in physical education" (p. 234). The study consisted of 184 high school girls from 14 to 17 years of age in three public high schools. Students were tested on a self-report relatedness scale (Furrer & Skinner, 2003) while teachers used a teacher-report engagement questionnaire (Skinner, Furrer, Marchand, & Kindermann, 2008) for every student. The students then used the same engagement questionnaire to self-evaluate. The results of the study concluded that students were most likely to engage in PE when they felt relatedness to their teachers. However, those students who did not relate to teachers but related highly with peers still showed relatively high levels of engagement.

Relatedness even had a greater effect on students' engagement than did perceived autonomy. Girls who showed high levels of relatedness demonstrated enthusiastic engagement

while girls with low levels of relatedness displayed boredom and lack of engagement. The study indicated that when students have high levels of student and teacher relatedness, motivational levels are at its peak. The study also revealed another very interesting finding. Interestingly, the girls' motivation improved when they felt a sense of relatedness with the teacher, however, when teacher relatedness was controlled and student-to-student relatedness was observed in isolation, the students' motivational profiles did not increase. This led the researchers to conclude that "The influence of peers on learning behaviors, such as effort, attention, and persistence, seemed to function not directly, but via the mediation of other motivation factors" (Shen et al., 2012, p. 242). One thing appears clear-without teacher-to-student relatedness, individual student motivation will not likely be at its highest in the PE setting though both teacher and student relatedness are necessary components; as those who do not feel a sense of relatedness with their teachers need to experience additional peer support. The study admits that parents, friends, and other important figures within and without the school environment must be considered in relation to relatedness. The researchers recommend further relatedness research involving males.

A study published the same year (Tao, Solmon, & Xiangli, 2012) also looked at teacher to student relatedness in physical education. As a rationale for their study Tao et al. (2012) cites work from Fredricks and Eccles (2002) which suggests an inverse relationship between age and motivation. That is, as students advance in physical education classes, their motivational profiles decline. The researchers therefore chose middle school students (as these are beginning years of declination in physical education). Participants were 273 middle school students (84 6th graders; 93 7th graders; 96 8th graders; 143 girls, 130 boys with an average age of 12 years) chosen from a suburban public school in the southeastern U.S. Although the researchers examined all three social supports (autonomy, competence, and relatedness) relatedness is of particular import to the

present study. A five-item scale (Standage, Duda, & Ntoumanis, 2005) was used to assess students' perceived relatedness. Interestingly, students' perceptions of relatedness support was not a significant motivational factor in this study. The researchers surmise that since "autonomy and relatedness constructs are complimentary in nature, students perception of teachers' autonomy support is likely linked with their sense of relatedness with teachers" (Tao et al., 2012, p. 340). In addition, the following assertions from the authors assist in pinpointing the rationale of the present study. They reason that because "relatedness support was not a unique predictor if teachers provide an autonomy-supportive environment in class. *More research is needed to examine the influence of relatedness support in physical education"* (Tao et al., 2012, p. 340) (emphasis added). As relatedness support in physical education is in its infancy, further research may advance the understanding of how teachers can improve teacher-to-student relatedness and thus improve practice.

Conclusion

Researchers have provided a sound foundation to further study motivation/amotivation in physical education. At this point, little is known about student amotivation in PE and the consequences thereof. The Shen et al. (2010) exploration of the influence of teacher-to-student social support is a good beginning in helping us understand the role PE teachers can play in decreasing all four subtypes of amotivation by meeting social needs (autonomy, competence and relatedness support). In addition, the aforementioned studies on teacher and student-to-student relatedness may guide future research in the development of the study of relatedness as a crucial social support. It is evident from the researchers themselves that much more needs to be studied concerning academic amotivation and the social support of relatedness in decreasing it. The current study therefore explores the effects of teacher and student-to-student relatedness support

on the motivational profiles of male junior high PE and weight-training students (with a particular emphasis on the four amotivational subtypes: ability beliefs, effort beliefs, value placed on the task, characteristics of the task.

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APPENDIX B

Methods

Context

The present study was conducted in three junior high schools in the Intermountain West. The first school was comprised of 675 male and 589 female seventh-to ninth-grade students with a majority of students from middle to middle-upper class socioeconomic backgrounds. The second school was comprised of 530 male and 556 female seventh-to ninth- grade students with a majority of students from middle to middle-upper class socioeconomic backgrounds. The third school was comprised of 956 students 475 male and 481 female seventh-to ninth- grade students with a majority of students from middle-class socioeconomic backgrounds. All classes were single sex and met daily for 45 minutes.

Participants

Participants consisted of 7th, 8th and 9th grade boys ($N = 180$) enrolled in weight-training classes. Each student received, and all participating students returned signed letters of consent and assent forms approximately two weeks before the study began. All study procedures received Institutional Review Board (IRB) approval before the study begins. The intervention itself occurred over approximately two weeks (10 school days).

Data Sources

Each of the following surveys were proctored using the same set of instructions that were read prior to each survey. Each survey has demonstrated acceptable levels of validity and reliability (Briere, Vallerand, Blais, & Pelletier, 1995; Guay & Vallerand, 2000).

Sport Motivation Scale. The seven-subscale, 18 item SMS II-PE assessed the motivational dispositions of students toward PE in general. It was used to measure intrinsic motivation (IM), extrinsic motivation (EM), and amotivation (AM) (Briere et al. 1995; Pelletier,

Fortier, Vallerand, et al., 1995; Prusak et al., 2004) at the contextual level. Students responded to each item on a 7-point Likert scale wherein "describes me not at all" = 1 and "describes me exactly" = 7. This scale is a contextual motivational measure which assesses the motivational dispositions of students toward physical education in general.

Situational Motivation Scale. The four-subscale, 16 item SIMS-PE was used to measure motivation at the situational level (Guay & Vallerand, 2000). The questions state, "Why are you currently engaged in these physical activities?" Students again responded to a 7-point Likert scale. For example, they responded they are participating in the current activities (a) "because I think that this activity is interesting" or (b) "because I don't have a choice."

Amotivation Inventory-Physical Education. The 7-subscale, 16-item Amotivation Inventory-Physical Education (AI-PE) (Shen, Winger, Li, Sun, & Rukavina, 2010) measured the four constructs of amotivation: (a) deficient ability beliefs, (b) deficient effort beliefs, (c) insufficient academic values, and (d) unappealing characteristics of school tasks. The AI-PE states, "I don't participate in PE acivities…" Students responded to 16 items on a 7-point Likert scale wherein "does not correspond at all" = 1 and "corresponds exactly" = 7.

Interpersonal Behavior Scale. Teacher-to-student relatedness was assessed using the 12 item Interpersonal Behavior Scale (IBS). The IBS is divided into three subscales assessing: autonomy support, competence support and relatedness support. Students responded on a 7-point Likert scale. For example, in describing their PE teachers (a) "I feel that my PE teacher sincerely cares about me" or (b) "my PE teacher does not care if I succeed or fail." All surveys were proctored using the same set of instructions that were read prior to each survey.

Procedures

All study procedures were submitted for approval through Brigham Young University's Institutional Review Board (IRB), from Nebo School District, and from the principals of the schools in which each study was conducted. All participating teachers assembled for script training in early August of 2013. In early September, the principal researcher distributed consent/assent forms to each of the teachers who distributed the forms to each of the students. One week previous to the intervention, the teachers distributed the SMS-PE-II survey to students in the class to measure the classes' current contextual motivation toward weight-training. The intervention occurred over two weeks beginning in the second week of September 2013. A two-week unit of instruction was taught to one of two treatment groups: (a) self-guided individual instruction (b) instruction with high levels of teacher-to-student and peer relatedness. Each treatment contained two weight-training classes. Surveys were administered pre and post-manipulation to all students in both treatment groups.

Data Analysis

Tests included 2[groups] by 2[trials], pre and post. The SIMS, AI-PE, and IBS scales were given the first and last days of the intervention. The data will was reduced by averaging items associated with each subscale and then all subsequent analyses were performed on these subscale's means. Group means and standard deviations were computed for all subscales. Reliability tests on the results of the questionnaire data (items assigned to each subscale) were examined using Cronbach's alpha. A between and within ANOVA omnibus test was used to test the treatment matrix.

Dependent and Independent Variables

Scores on the SMSPE, SIMS, IBS, AI-PE tests were the dependent variables. Two treatment groups served as the independent variables.

APPENDIX C

CONSENT FORM

Parental Permission for a Minor

Introduction

My name is Zack Beddoes and I am a graduate student at Brigham Young University. I am conducting a research study about the effects of teacher and peer-relatedness on student motivation in boys' physical education and weight training classes. I am inviting your child to take part in the research because (he/she) is currently enrolled in one of the aforementioned classes.

Procedures

If you agree to let your child participate in this research study, the following will occur. Your child will be given four questionnaires to test their current motivational profiles. This questionnaire will be given at the beginning and end of the study.

Risks

There are minimal risks in participating in this study.

Confidentiality

The data that is gathered will be kept confidential and all data will be protected under lock and key where only the researchers will have access.

Benefits

There are no direct benefits to your child for participating in this study.

Compensation

There will be no compensation for participation in this study.

Questions about the Research

You can contact Zack Beddoes anytime at phone: (801) 367-5709 or email: zack.beddoes@nebo.edu to inquire about any aspect of your child's participation in this study.
You can also contact the IRB Administrator, Office of Research and Creative Activities (ORCA), A 285 ASB, Brigham Young University, Provo, UT 84602, Phone: (801) 422-3841, Fax: (801) 422-0620, Email: irb@byu.edu
You have been given a copy of this consent form to keep.

Participation

Participation in this research study is voluntary. You are free to decline to have your child participate in this research study. You may withdraw your child's participation at any point without penalty.

Child's Name:_____

Parent Name:_____Signature:_____Date:_____

APPENDIX D

SITUATIONAL MOTIVATION SCALE II-PHYSICAL EDUCATION (SMS II-PE)

Directions: Read each item carefully. Using the scale below, please circle the number that best describes the reason why you are currently engaged in this skill testing activity. Answer each item according to the scale indicated.

Why do I participate in physical education/weight training?

#	Item	Corresponds not at all		Corresponds moderately			Corresponds exactly	
1	Because it gives me pleasure to learn more about the activity	1	2	3	4	5	6	7
2	Because weight lifting reflects the essence of who I am	1	2	3	4	5	6	7
3	Because I have chosen weight lifting as a way to develop myself	1	2	3	4	5	6	7
4	Because I would feel bad about myself if I did not take the time to do it	1	2	3	4	5	6	7
5	Because people I care about would be upset with me if I didn't	1	2	3	4	5	6	7
6	I used to have good reasons for weight training, but now I am asking myself if I should continue	1	2	3	4	5	6	7
7	Because I find it enjoyable to discover new weight lifting strategies	1	2	3	4	5	6	7
8	Because participating in weight lifting is an integral part of my life	1	2	3	4	5	6	7
9	Because I found it is a good way to develop aspects of myself that I value	1	2	3	4	5	6	7
10	Because I feel better about myself when I do	1	2	3	4	5	6	7

11	Because I think others would disapprove of me if I didn't	1	2	3	4	5	6	7
12	So that others will praise me for what I do	1	2	3	4	5	6	7
13	Because it is very interesting to learn how I can improve	1	2	3	4	5	6	7
14	Because through weight lifting I am living in line with my deepest principles	1	2	3	4	5	6	7
15	Because it is one of the best ways I have chosen to develop other aspects of myself	1	2	3	4	5	6	7
16	Because I would not feel worthwhile if I did not	1	2	3	4	5	6	7
17	Because people around me reward me when I doe	1	2	3	4	5	6	7
18	It is not clear to me anymore; I don't really think my place is in weight lifting	1	2	3	4	5	6	7

APPENDIX E

SITUATIONAL MOTIVATION SCALE (SIMS)

Why are you currently participating in this body conditioning unit?

#	Item	Corresponds not at all			Corresponds moderately			Corresponds exactly
1	Because I think that this activity is interesting	1	2	3	4	5	6	7
2	Because I am doint it for my own good	1	2	3	4	5	6	7
3	Because I am supposed to do it	1	2	3	4	5	6	7
4	There may be good reason to do this activity, but personally I don't see any	1	2	3	4	5	6	7
5	Because I think that this activity is pleasant	1	2	3	4	5	6	7
6	Because I think that this activity is good for myself	1	2	3	4	5	6	7
7	Because it is something that I have to do	1	2	3	4	5	6	7
8	I do this activity but I am not sure it is worth it	1	2	3	4	5	6	7
9	Because this activity is fun	1	2	3	4	5	6	7
10	By personal decision	1	2	3	4	5	6	7
11	Because I don't have a choice	1	2	3	4	5	6	7
12	I don't know. I don't see what this activity gives me	1	2	3	4	5	6	7
13	Because I feel good when I do this activity	1	2	3	4	5	6	7
14	Because I believe that this activity is important for me	1	2	3	4	5	6	7
15	Because I feel that I have to do it	1	2	3	4	5	6	7
16	I do this activity, but I am not sure it is a good thing to pursue	1	2	3	4	5	6	7

APPENDIX F

AMOTIVATION INVENTORY-PHYSICAL EDUCATION (AI-PE)

Using the scale provided, please indicate the extent to which each statement corresponds to your own reasons for not wanting to participate in Weight Training activities.

I don't participate in WT activities…	Does not correspond at all			Corresponds moderately			Corresponds exactly
1. Because, for me, WT holds no interest.	1	2	3	4	5	6	7
2. Because I'm not good at WT.	1	2	3	4	5	6	7
3. Because I'm not energetic enough for WT.	1	2	3	4	5	6	7
4. Because participating in WT is not important for me.	1	2	3	4	5	6	7
5. Because participating in WT is not valuable to me.	1	2	3	4	5	6	7
6. Because I don't have what it takes to do well in WT.	1	2	3	4	5	6	7
7. Because I'm a bit lazy.	1	2	3	4	5	6	7
8. Because I don't like the activities we are doing in WT.	1	2	3	4	5	6	7
9. Because I have no good reason to participate in WT.	1	2	3	4	5	6	7
10. Because I find that the activities we are doing are boring.	1	2	3	4	5	6	7
11. Because I don't like to invest the effort that is required for WT.	1	2	3	4	5	6	7
12. Because I have the impression that it's always the same thing in WT everyday.	1	2	3	4	5	6	7
13. Because I don't have knowledge/skill required to succeed in WT.	1	2	3	4	5	6	7
14. Because I don't have the energy to participate in WT.	1	2	3	4	5	6	7
15. Because the activities in WT are not stimulating.	1	2	3	4	5	6	7
16. Because the tasks demanded of me in WT surpass my ability.	1	2	3	4	5	6	7

APPENDIX G

INTERPERSONAL BEHAVIORAL SUPPORT (IBS)

With the scale below, indicate to which extent your Weight Training (WT) teacher, as a whole, behaves as depicted in the items presented below.

		Never			Sometimes			Always
1.	I feel that my WT teacher sincerely cares about me.	1	2	3	4	5	6	7
2.	My WT teacher does not care if I succeed or fail.	1	2	3	4	5	6	7
3.	When I ask my WT teacher to help me with a problem, he asks me what I think before giving me his opinion.	1	2	3	4	5	6	7
4.	The feedback I get from my WT teacher makes me feel confident in my ability to learn WT.	1	2	3	4	5	6	7
5.	My WT teacher encourages me to be myself.	1	2	3	4	5	6	7
6.	I feel that my WT teacher honestly enjoys spending time with me.	1	2	3	4	5	6	7
7.	The feedback I get from my WT teacher takes the form of useful information for learning.	1	2	3	4	5	6	7
8.	My WT teacher seems to be genuinely interested in what I do.	1	2	3	4	5	6	7
9.	My WT teacher only tells me about my faults.	1	2	3	4	5	6	7
10.	My WT teacher provides me with lots of opportunity to make personal decisions in what I do.	1	2	3	4	5	6	7
11.	My WT teacher sends me the message that I'm capable of learning in PE.	1	2	3	4	5	6	7
12.	My WT teacher openly acknowledges my thoughts and feelings although they may be different from theirs.	1	2	3	4	5	6	7

APPENDIX H

TEACHER SCRIPTS

Note to researchers: *The central focus of this study is to observe the effects of levels of relatedness. It is therefore important to remember that all other variables should be held constant. For example: Teachers should follow normal procedures and routines for beginning and ending class for both treatment groups (i.e. warm-ups, roll taking, cool downs, management and discipline issues etc.) For the self-guided learning group, teachers should remain cordial, friendly and fair, and deliver clear content and use sound teaching practices, just as in the high-relatedness group.*

Within these scripts relatedness will be "measured by school climate, quality of teacher-student relationships, feelings of belonging, caring, inclusion, acceptance, importance, and interpersonal support" (Shen, McCaughtry, Martin, Fahlman, & Garn, 2012).

Self-guided learning (black) (see Mosston's (1981) spectrum of teaching styles)

High teacher and peer-relatedness script and activities: (italicized) ie: teacher-student relationships, feelings of belonging, caring, inclusion, acceptance, importance, and interpersonal support (frequency of interaction and quality of instruction and feedback).

Explanation of how the manipulation fits with relatedness support as defined in this study (blue)

Day 1:"For the next two weeks we will have the privilege of being taught by different fitness instructors. Today we will watch Tony instruct us on how to stretch. We will use these stretches throughout this unit." Insert p90x "X stretch" disc while reminding students to focus on the instructor in the video. Teachers will play the video for the duration of the class.

Day 1: "The next two weeks are going to be really great. I've been excited to teach this unit so I can do it with you. Every day will be a different activity. We will be instructing each other. If you have particular expertise in any of these areas, please let me know so you can help me instruct." "How many of you have ever been to an NBA, NFL, or college basketball or football game? Have you ever arrived early enough to see them stretching in the middle of the court or field? Why do they do this? How many of you like to stretch? I can understand that sometimes it seems like it takes too long or it hurts or maybe you don't notice a difference because you are still young. I still find it difficult to stretch like I ought to but as I do I notice that I feel much better. (Validating and Negotiating w/ students demonstrates acceptance, importance and interpersonal support. The teacher is allowing the students to feel that they are accepted even if they heretofore have not enjoyed nor observed the self-benefits of stretching. Yet, the teacher reaffirms the importance of stretching, not only with the whole class but with each individual student as the teacher instructs and validates each student while giving relating and helpful feedback, instruction and encouragement. *Today we are going to focus on stretching and I want to show you some stretching that the greatest athletes in the world use." Teachers will lead the class in a*

stretch routine and then culminate in partner PNF stretching (hamstrings). As students engage with partners they are more likely to feel a sense of belonging in the class. In addition, the PNF stretches places responsibility on both partners to specifically communicate about the stretch. Student's interpersonal support is strengthened as they fulfill a critical role in performing the stretch properly. *Then have them switch partners and engage in upper body towel stretches.* Student's belonging, importance in the class and interpersonal support are fostered as they frequently switch partners and interact with all classmates. *Encourage safety and good communication and discussion between partners.*

Day 2 "Today we are going to listen to Tony Horton instruct using P90x" (a very popular fitness program which is commonly used district-wide). "I want you to hear all the instructions closely so that you know how to perform these exercises. Therefore, it should be very quiet in class. I will evaluate your form from my desk and give you participation grades accordingly. If you need any help with the exercises, you may come to my desk and ask me but most of it should be self-explanatory if you pay close attention to the video. If you do not come to my desk I will assume that you have it figured out. As long as you work the entire time without interfering with your neighbor, you will pass this unit of instruction. OK, let's go to work. Remember we need to focus on our form so please don't talk to your neighbors." Teachers insert P90x Kickboxing.

Teacher will insert p90x "kenpo" disc and evaluate students from their desk. Teachers should be kind, warm and friendly but engage in very little interaction with students. Teachers should busy themselves with their own work at their desks and maintain a quiet learning environment.

Day 2: "Did you like the partner stretches yesterday? Which was your favorite? Allow for a short (2-3 minute) discussion of student's experience with the previous day's stretching. Why was it important that you and your partner communicated directly and clearly during the stretch? What may have happened if there were not communication? I think those same principles apply to this class; so much about what we do will involve communication with each other and working to make your partner great. Teachers will create a buddy system and explain to the class that "we are all responsible for each other. It is now your responsibility to help your buddy be great. If your buddy is having a hard time, please help him out. If he is struggling with his technique on a lift, it is your responsibility to be a personal coach and help him out." This is a critical component of peer relatedness as this gives the students an opportunity to not only work with all class members during different lessons but also to be responsible for another individual and understand that another individual is responsible for them. This may further the students "feelings of belonging, caring, inclusion, acceptance, importance, and interpersonal support." *How many of you have ever done kickboxing before? When? Was it fun? This will be a little awkward for me too but at least we can all be a little awkward together." Teachers carefully select responsible (charismatic) students to lead engaging warm-ups with the class as teachers move about the class speaking to each student individually*,(inclusion, importance) *while giving gentle corrective feedback* (interpersonal support) *to students as they stretch and warm up. After 5 minutes the teacher begins teaching the individual punches and kicks of kickboxing (as they*

are presented on the P90x Kenpo i.e. jab, cross, hook, uppercut). As teachers teach, they are careful to monitor, pause and adjust the workout according to the needs and desires of the students. Teachers should smile, show enthusiasm and use humor to interact with the students (caring).

Day 3: "Thank you for quietly participating in these exercises. If it is quiet, it helps everyone to learn. Remember to come to my desk and ask me if you have any questions." Teachers insert P90x "Ab-ripper" Since the "Ab-ripper" is only 20 minutes in duration, teachers will administer a short quiz (provided by the central researcher to all cooperating teachers) to assess student learning from the past three days of instruction. Each student will take this test on his own. If time permits, the teacher will grade the quiz out loud.

Day 3: I notice all the time that people are obsessed with getting a six-pack. Have you noticed that it seems like everyone wants to have stronger abs? Today we are going to do the ab-ripper from p90x. There are some fantastic exercises in this DVD to help you get the lean abs you want. The neat thing is that you all can improve and be successful no matter what level you are on. (Acceptance, Importance) *Teachers play the video with frequent pauses to explain technique and pick out several students to model appropriate technique* (Importance). *For example a teacher might say "Billy you worked very hard at those mason twists. Look everyone Billy is dripping, watch how much he engages his core by staying perfectly balanced (Billy demonstrates). That is how you get results!"* Thus reinforcing quality of teacher-to-student relationships. *Teachers will then administer a short quiz for students to complete in partners.*

Day 4: "Today we are going to take a break from P90x and watch a short clip about Jerry Rice. We can learn a lot from Jerry because of his amazing work ethic. Listen closely to what he teaches us." As students go through the video clip they will fill out a handout (provided by the principal researcher). When students finish with the hand-out they can reflect on their own work ethic and write a page (on their own) about their personal "hill" and how they can conquer it.

Day 4: "Who would you consider to be the greatest athletes of all time (discussion)? Which sport or activity requires you to be in the best shape (friendly debate allowing a student voice from various activities such as team sports, skateboarding, swimming or mountain climbing etc.)? Validation of importance for activities each student is involved with outside of the school PE setting. In this way, students are able to be feel inclusion, acceptance, and importance as one particular physical activity is not favored over another in weight-training. For example, if students believe that weight-training is primarily for football players or wrestlers, they may decide that if they participate in any other activity it must not relate to them. *How many of you have heard of Jerry Rice? Did you know that when he played in the NFL he earned 5 Superbowl rings? Many considered him to be one of the best conditioned athletes of all time? I want to show you some of the things he does and then I want to help you so you know these exercises. What's really neat is that these exercises do not require a lot of money."* Inclusion—all can participate in the same exercises in and out of class regardless of socioeconomic backgrounds. *Teacher*

shows clips of the Jerry Rice workout video (provided by the principal researcher). Students are asked to think about their personal "hills" they must conquer in their lives and in their training. After 2 or 3 minutes, the teacher groups students into groups of 3 or 4. Within their groups, students plan a short lesson about their common "hills" which they present to the class (interpersonal support).

Day 5: "Today we are going to run the mile. I want to see how fast you can run the mile and then we will test you several more times to see if you are improving. Do the best you can and remember this is your time and your grade." When students have all completed the mile, the teacher will give a lecture (provided by the principal researcher) on cardiovascular fitness.

Day 5: "Today we are going to do a little social running. We will run for 12 minutes. Every time I blow the whistle I want you to find someone else to talk to that you don't know very well. We will switch 4 times. This gives you three minutes with each partner. After the jog, I will randomly select 4 or 5 of you to teach the class what you learned about your classmates." Teacher will also engage in a conversation with some of the students (particularly the slower ones) and be ready to tell the class what they learned. The teacher will use a checklist to record which students they interacted with that day and the gist of the conversation. Over the next two days the teacher will seek opportunities to have the same type of conversation with all students. Quality of teacher-student relationships, feelings of belonging, caring, inclusion, acceptance, importance, and interpersonal support"

Day 6: "As you know, it is not only important to be strong physically, but also mentally. Today we are going to meditate. As we meditate, it should be completely quiet with no distractions. Just relax and listen closely to the CD." Teacher insert C.D. (provided by principal researcher) of meditation for class to listen to and follow. At the end of class, each student is given a SMART goal sheet (as a measure of school climate) and asked to fill it out and keep it for their own benefit and reflection. The teacher does not ask to collect the goals nor respond to them.

Day 6*: "Yesterday we worked the heart and learned a lot about each other. Today we are going to meditate." Teacher explains procedure for meditation. Teacher creates an atmosphere of quiet concentration. <u>The teacher will conduct the meditation</u> (progressive relaxation). Following the meditation, (10 minutes) teachers will share an inspirational motivation story with students about overcoming obstacles in their lives and strive to create a discussion while encouraging students to set their own SMART goals* (as a measure of school climate) *and work hard to achieve them in this class. The students will record their own personal goals for the class and turn them in to the teacher. The teacher will respond to each of the goals in writing and return the goals to the students the following day. The teacher may elect to anonymously select several of the most articulate student goals to display around the weight room.* As teachers respond to each student's written goal with a comment and/or question of their own it may help the students to understand that the teacher really interested in each student and seeks to help them accomplish the goals which the individual student feels are important. This also could provide opportunity

for the teacher to teach students how to record appropriate goals as well as provide additional conversation between teacher and student as to smaller, incremental goals they may wish to list in order to accomplish their large goals.

Day 7: "I hope you enjoyed your meditation yesterday. Remember that all these concepts are very important to you and you should listen closely and apply them to your life." On Monday we talked about cardiovascular endurance and we ran the mile. Today we are going to discuss the difference between anaerobic and aerobic metabolism and then we will run the PACER test." Teacher gives short lecture (provided by principal researcher) on aerobic/anaerobic and then insert the pacer C.D. (provided by principle researcher) for students to follow. When students are done with the pacer test, they will individually go to a designated area and record how many pacers they ran. The teacher will observe but give little feedback. Those students who finish early should engage in static stretching on their own.

Day 7: "Thank you for your help with meditation yesterday. Did anyone go home and try it again? Today we are going to do a lot of stopping, starting, and sprinting. This will help us with many activities we enjoy doing. Remember that yesterday we set goals for striving to be our best selves. I want you to count how many rounds you get in this pacer test but remember that you are only competing against yourself. However, if anyone beats this old man, (the teacher) you can put me through a 5 minute workout of your choice next week." Teachers encourage an atmosphere where those who get out of the race continue to encourage other students, especially encourage them to "beat-the-teach." The teacher does the best he can at the race and is sure to congratulate and give high 5 to all students following the activity. Teacher explains that "next time they run the pacer we will see if you youngsters can keep up" while smiling. (quality of teacher-student relationships, feelings of belonging, caring, inclusion, acceptance, importance, and interpersonal support") *When all students are finished with the pacer test, students will line up to report their scores to the teacher. The teacher gives appropriate and legitimate feedback and recognition of effort to each student. While students are waiting for the teacher to record the scores they will engage in static stretching while visiting with a partner.*

Day 8: "Today we will do circuit training" (teacher explains the concepts of circuit training and how to move about the weight room). Rotate every minute on the minute. "I will blow my whistle to remind you when to rotate. Remember to move from one exercise to another quickly and quietly to keep your heart rate elevated. If you need a drink, you may get a drink and then please join in where you left off. I will pause the circuit training for a two minute break as well for you to stretch and get water." Teachers begin circuit training while observing from across the room or from their desk. Teachers may shout out a command or instructions but should refrain from unnecessary conversation with students.

Day 8: Teacher conducts circuit training and carefully sets up the rotations to allow partners to work together while teacher continually moves about the class encouraging the lifters and helping everyone stay on task and know exactly which station they will rotate to next. During the

last few minutes of class teacher will ask students, "how many of you did I talk to today?" This can act as a self-assessment for teachers to evaluate their effectiveness in engaging with each student. (quality of teacher-student relationships, feelings of belonging, caring, inclusion.)

Day 9: "Now you are ready to begin learning some of the power lifts (Olympic lifts). This instructional video is very good. Let's watch how they perform the lift and then we will try the lifts ourselves. Our instruction for today will concentrate on the squat, the bench, and the power clean." Teachers insert instructional video. All three lifts will be demonstrated on the video. After the training DVD is over, the teacher will have each student demonstrate the three lifts and pass them off to the teacher for proper technique.

Day 9: The teacher will demonstrate or have competent students demonstrate the lifts. The teacher will mix instruction with high doses of encouragement for students to keep trying the lifts-giving very specific feedback on what the student is doing well and what they can improve on. Using 3x5 cards, teachers will move around the room and document specific instructions to individuals to work on. The teacher will give the 3x5 cards to the students and tell them to keep them in their locker to refer to when they do the exercise again.

Day 10: "Let's put it all together today. I'll turn on some music and you can follow the lifting program as outlined on the board. I have a few exercise books that you may refer to if you need instructional help with the lifts. It's always good to find out the answers for yourselves instead of relying on others. If you still have a question after referring to the books, come ask me and I will help you."

Day 10: Teachers choose 4 or 5 of the students in class whom they would perceive to be amotivated or the least not instrinsically motivated to lift. Teachers take these students through a workout with high levels of encouragement and feedback. This allows teachers to zero in on specific students who may be showing some frustration or discouragement after two weeks of exercise instruction.

APPENDIX I

QUIZ

Kickboxing, Flexibility, Core Stability

Self-Guided: Students have 10 minutes to take quiz on their own. Teacher collects, grades, and returns quiz to students the following day.

High Relatedness: Students will work on own for 2 minutes. Then they will be allowed to work with a partner for 4 minutes. After which, a 4 minute class discussion on the quiz will ensue.

1. When kickboxing for aerobic exercise, one must be sure to extend the joints fully with each strike and kick. True or False

2. Which of the following is NOT a P90X Kenpo upper-body strike?

A) hook B) thrust C) cross d) jab e) uppercut

3. Name 3 benefits to training with kenpo kickboxing:

Answers may include: Increased aerobic capacity, increased flexibility, increased balance, increased focus etc.

4. What do you consider to be the most difficult aspect of kickboxing? Why?

5. Several professional athletes, including Kobe Bryant, use martial arts as part of their training program-why might this be?

6. Define Flexibility: Ability to move a joint through full Range of Motion.

7. Why might it be important to focus on flexibility in a weight-training class?

8. Name 3 core exercises from P90X: (i.e. “mason twists” “heels to heavens” “in and outs”

9. To get “the best, most ripped abdominal area” the instructor (Tony Horton) encourages any serious weight lifter to use “Ab-ripper X” every day? Why or Why not?

10. Which is your favorite workout of the three P90X DVD’s we have used thus far in class? Why?

APPENDIX J

SMART GOALS

Specific

Measurable

Attainable

Realistic

Timely

1) **Write a SMART goal for this class.**

2) **Write a SMART goal for an out-of-class fitness program.**

APPENDIX K

Curriculum Timeline

SMSPE	Flexibility AI-PE IBS **DAY 1**	Kickboxing SIMS **DAY 2**	Core-Ab Development (10 question quiz) **DAY 3**	Jerry Rice Handout (Hill Assignment) **DAY 4**	Aerobic Capacity **DAY 5**	
	DAY 6 Meditation (SMART Goals)	**DAY 7** Fitness Test (PACER)	**DAY 8** Circuit Train	**DAY 9** Olympic Lift SIMS	**DAY 10** Free Lift AI-PE IBS	**SMSPE**

APPENDIX L

PACER TEST SCORE

Name	Time