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Student-athletes (SAs) face challenges to maintaining physical activity as they graduate beyond college athletics. Transition barriers include the loss of team support (Fuller, 2014), less motivation without specific goals (Plateau, Petrie, & Papatomas, 2017) and identity-related changes (Fuller, 2014; Reifsteck, Gill, & Labban, 2016). The purpose of this project was to implement and evaluate *PILATES Connect*, designed to support basic psychological needs satisfaction and self-determined motivation for final-year SAs as they transition to enjoyable and sustainable lifetime physical activity.

Using Self-Determination Theory (SDT) as a framework, SAs progressed in Pilates training and discussed the transition with peers. Twelve participants completed *PILATES Connect* with an adherence rate of 94.4% and strongly recommended the program for others. Pre and post-program Basic Psychological Needs in Exercise Scale (BPNES) and Behavioural Regulation in Exercise Questionnaire (BREQ-3) scores did not reveal significant changes in basic psychological needs satisfaction and self-determination for physical activity. However, participant ratings of perceived autonomy and relatedness were consistently high through the six sessions. Perceived competence ratings increased significantly from earlier to later sessions,  $F(5, 3) = 29.7, p = .009$ . Participants progressed in Pilates skills, enjoyed the freedom to modify or advance exercises and felt less alone as they discussed ideas with other SAs. Adherence rates, evaluations and focus group feedback provide support for continuing to offer *PILATES Connect* in the future, supporting SA lifetime physical and psychological wellness.

*PILATES CONNECT: SUPPORT FOR COLLEGIATE STUDENT-ATHLETES IN THE  
TRANSITION TO MEANINGFUL LIFETIME PHYSICAL ACTIVITY*

by

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## **CHAPTER I**

### **PROJECT OVERVIEW**

Challenges to maintaining consistent physical activity may arise in the transition out of college, as alumni adjust to new careers, graduate programs, living arrangements, social relationships and daily routines. Student-athletes (SAs) face additional barriers to maintaining physical activity as they graduate beyond the formal training and competition of college athletics. Years of sport-specific training may leave former SAs without a foundation for sustainable lifetime physical activity. Research suggests that SA alumni have reduced physical activity levels in comparison to current SAs and may be no more active or fit than non-SA alumni (Reifsteck, Gill, & Brooks, 2013; Simon & Docherty, 2017; Sorenson, Romano, Azen, Schroeder, & Salem, 2015). During their athletic careers, many SAs train to improve performance and may not fully understand the value of engaging in activity for physical and psychological health (Theberg, 2007).

#### **Background Literature**

As SAs enter retirement, they must learn to integrate physical activity within new life commitments, which can feel frustrating after the priority placed on training during college (Plateau et al., 2017). Transition barriers to physical activity include loss of team support (Fuller, 2014), less motivation without specific goals (Plateau et al., 2017) and identity-related changes (Fuller, 2014; Reifsteck et al., 2016). Within this transition, SA alumni have reported significantly worse physical function, depression, fatigue, sleep

disturbance and pain interference in comparison to the general population (Simon & Docherty, 2014).

### **Challenges to Lifetime Physical Activity**

Limited experience with lifetime activities and identities solely rooted in athletics can threaten sustainable physical activity for SA alumni. Year-round training for a specific sport can contribute to difficulty in transitioning to other forms of physical activity beyond graduation (Sorenson et al., 2015). This focus may promote success in college, yet it often prevents exploration of other activities. At career conclusion, SAs recognize that other experiences would have been valuable in preparing for the transition to alumni (Stoltenburg, Kamphoff, & Bremer, 2011). Former SAs may have developed a salient athletic identity that takes precedence over other roles during college. SAs with stronger investment in athletic identities may experience more retirement difficulty when compared with SAs who balance athletic identities with other pursuits (Fuller, 2014).

The striking loss of external motivators and team support may also contribute to greater difficulty in maintaining physical activity after graduation. Many SAs thrive on extrinsic motivators such as scholarships, playing time and recognition. When extrinsic factors are the primary source of motivation, it can be difficult to reframe the purpose of physical activity after college athletics. Intrinsic motivation, however, involves pursuit of an activity for the inherent satisfaction of involvement (Ryan & Deci, 2000).

SA alumni have reported struggling with intrinsic motivation for physical activity without the specific goals or coaches that they relied on during their college training programs (Plateau et al., 2017). This compounds transition challenges, as intrinsic

orientations are associated with greater well-being and task-persistence when compared to extrinsic orientations (Ingledeu, Markland, & Ferguson, 2009; Ryan, Williams, Patrick, & Deci, 2009). In addition, the natural disbanding of teams can lead SAs to fear that the camaraderie and support that they experienced will not be replicated in the future (Fuller, 2014). Greater transition difficulty is likely when SAs' social network in college exclusively consists of teammates (Stoltenburg et al., 2011). Research highlights the barriers that SAs face in the transition to physically active lifestyles beyond college athletics. Few physical activity intervention programs exist to address these challenges. Over 480,000 SAs compete in NCAA sports each year (NCAA, 2015), more than 95% of whom will not continue their athletic careers at a competitive level after college. Thus, there is an ongoing need for a physical activity transition curriculum, which can be adapted and implemented at various NCAA institutions.

### **Self-Determination Theory Framework**

Self-Determination Theory (SDT) offers a valuable framework for developing physical activity transition programming for SAs. SDT explores human motivation through personality, goals, energy, behavior, well-being and social environment (Deci & Ryan, 2008). It is helpful to view motivation on a continuum. At the far extreme, amotivation is when a person feels unwilling to participate in an activity. External regulation describes involvement to satisfy external demands or rewards, while introjected regulation includes involvement to avoid failure and attain feelings of worth. With identified regulation, conscious value is placed on the behavioral goal. Integrated regulation includes behaviors that are assimilated within the self, but are still not pursued

for innate enjoyment. SDT places emphasis on fostering intrinsic motivation, which is characterized by interest, enjoyment and inherent satisfaction (Ryan & Deci, 2000).

Fulfillment of the basic psychological needs for competence, autonomy and relatedness enhances intrinsic motivation, which significantly predicts physical activity enjoyment and adherence (Barbeau, Sweet, & Fortier, 2009; Ryan, R.M. et al., 2009; Teixeira, Carraça, Markland, Silva, & Ryan, 2012; Vlachopoulos & Michailidou, 2006). While these needs may have been fulfilled in specific ways during college athletics, transitional strategies must emerge for SA alumni to experience physical activity satisfaction. Effective support during the final year in college may empower SAs to seek opportunities for physical activity beyond graduation.

Competence involves self-efficacy in mastering challenging tasks (Ryan & Deci, 2000). Competence may fade when SAs are no longer training for and competing in their sport. Autonomy includes self-directed choice for personally endorsed and meaningful activities (Ryan et al., 2009). If their sport-specific training involved few choices, SA alumni may feel unprepared to navigate their newfound physical activity autonomy. Relatedness emphasizes belonging and connection, as people feel included and cared for by others (Ryan et al., 2009). The natural disbanding of teams after the final season can shake SAs' social support. The prospect of activity without teammates can feel isolating.

### **Lifetime Activity Transition Support through Pilates**

Programs that support basic psychological needs satisfaction during this transition can equip final-year SAs to pursue future physical activity that is interesting and sustainable. While research has focused on career-related transition programming for

elite and collegiate athletes (Petitpas, Danish, Murphy, & McKelvain, 1992; Stambulova, Alfermann, Statler, & Côté, 2009; Wylleman, Alfermann, & Lavallee, 2004), few interventions have emphasized lifetime physical activity. Moving On! is one program that addresses challenges to sustainable physical activity and healthful nutrition faced by transitioning SAs. Moving On! provides an avenue for discussion, practical skill-building and exposure to lifetime physical activities (Reifsteck & Brooks, 2018). In this program, participants practice setting effective goals and action plans, while experiencing different forms of physical activity. Building on the framework of Moving On!, final-year SAs could benefit from consistent involvement in group exercise classes, like Pilates. In this structure, SAs could experience competence as they progress in a new physical activity, practice autonomy as they make movement choices and enhance relatedness through the positive social support of peers.

Pilates empowers participants toward enhanced personal control over movements by emphasizing core muscular fitness, flexibility, balance, posture and breathing. Pilates classes create reflective and purposeful environments for physical activity. Instruction emphasizes body alignment and breathing awareness, which foster mindfulness and well-being (Caldwell, Adams, Quin, Harrison, & Greeson, 2013). Mindful physical activity can promote satisfaction of basic psychological needs (Chang, Huang, & Lin, 2015; Hodgins & Knee, 2002). There is autonomy and competence support, as SAs choose how to complete movements and receive constructive feedback. Making a conscious choice on how to move safely and effectively is empowering (Caldwell et al., 2013).

## Purpose and Aims

As SAs transition beyond the framework of college athletics, new strategies are necessary to support lifetime physical activity. There is a critical need to develop an effective intervention that prepares final-year SAs to transition to meaningful lifetime physical activity, thus supporting physical and psychological wellness. Using SDT as a framework, the *PILATES Connect* program for final-year SAs can provide effective physical activity transition support. The purpose of this project was to implement and evaluate *PILATES Connect*, designed to support SAs in the transition to sustainable and enjoyable lifetime physical activity. The program was implemented at the researcher's institution, a college of the liberal and applied arts and sciences with 3,331 undergraduate and graduate students and 23 NCAA Division III sports. Specific project aims included:

**Aim #1: Assess feasibility of *PILATES Connect* for final-year SAs.** Feasibility was addressed through participant attendance and feedback on program strengths and areas for improvement in written evaluations and focus groups.

**Aim #2: Evaluate how *PILATES Connect* prepares final-year SAs to transition to lifetime physical activity by supporting self-determined motivation and basic psychological needs satisfaction.** Through pre and post-surveys, written evaluations and focus groups, it was expected that SAs would agree that the program supported competence, autonomy and relatedness in physical activity.

## Methods

A pilot study provided preliminary evidence of interest in *PILATES Connect* at the researcher's institution. In January 2018, nine final-year SAs participated in a three-

week pilot program. The adherence rate was 91%. SAs strongly agreed that the program increased 1) confidence in transitioning to meaningful physical activity, 2) perceived control over activity choices and 3) connection with other participants. SAs recommended *PILATES Connect* to others. After reviewing pilot data, a journaling component was added to the program and the Behavioural Regulation in Exercise Questionnaire (BREQ-3) (Markland & Tobin, 2004) was included for evaluation. The revised *PILATES Connect* program was implemented during the fall 2018 semester.

### **Participants**

After obtaining Institutional Review Board approval, recruitment of final-year SAs occurred during August and September of 2018. Participants were recruited through an email that clarified the research purpose and criteria for involvement (Appendix A). The sample included 13 final-year SAs. One SA withdrew from the study due to a pre-existing medical condition. The final sample size of 12 final-year SAs ( $M age = 21.3$ ,  $SD = .49$ ) was ideal for a Pilates class and promoted effective small group discussion.

Eleven participants identified as white, with one SA choosing not to respond to race and ethnicity. Participants were injury-free and represented women's soccer ( $n = 6$ ), men's baseball ( $n = 3$ ), women's field hockey ( $n = 1$ ), men's lacrosse ( $n = 1$ ), and men's track and field ( $n = 1$ ). Participants participated in physical activity three to four times each week ( $n = 4$ ) or more than five times each week ( $n = 8$ ). A few participants had moderate experience with Pilates ( $n = 3$ ), while most had little to no experience ( $n = 9$ ). SAs signed an informed consent form that stated that participation was voluntary and deciding to discontinue participation would not affect athletic standing (Appendix B).

## Measures

Attendance was taken at each *PILATES Connect* session to calculate adherence. Survey assessment of basic psychological needs satisfaction and self-determined motivation in physical activity, session and program feedback forms and focus groups were used for program evaluation. SAs completed the Physical Activity Readiness Questionnaire (PAR-Q) (Warburton et al., 2011) and an information sheet (Appendix C) prior to the first session.

**BPNES.** The Basic Psychological Needs in Exercise Scale (BPNES) is a self-report instrument to assess perceptions related to competence, autonomy and relatedness fulfillment in physical activity (Vlachopoulos & Michailidou, 2006). Participants responded to 11 statements on a 5-point scale (*1 = I don't agree at all, 5 = I completely agree*). Satisfactory internal reliability and validity of the scale has been reported for male and females and in cross-cultural settings (Vlachopoulos, 2008; Vlachopoulos et al., 2013; Vlachopoulos, Ntoumanis, & Smith, 2010). The BPNES was administered through a Qualtrics survey pre and post-program. Subscale items were totaled.

**BREQ-3.** The Behavioural Regulation in Exercise Questionnaire (BREQ-3) (Markland & Tobin, 2004; Wilson, Rodgers, Loitz, & Scime, 2006) includes 24 statements to evaluate why people choose to participate or not participate in physical activity. Subscales include amotivation, external regulation, introjected regulation, identified regulation, integrated regulation and intrinsic regulation. Participants responded to statements using a 5-point scale (*0 = Not true for me, 4 = Very true for me*). The construct validity of the BREQ is supported (Wilson, Rodgers, & Fraser, 2002), with

evidence of cross-cultural reliability and validity (Farmanbar, Niknami, Hidarnia, & Lubans, 2011; Murcia, Gimeno, & Camacho, 2007). The BREQ-3 was administered through a Qualtrics survey pre and post-program. Subscale items were totaled.

**Session and program feedback forms.** On the session feedback form (Appendix D), participants used a 7-point scale (*1 = Not at all true, 7 = Very true*) to rate three statements adapted from the Intrinsic Motivation Inventory (IMI) (Deci & Ryan, 2003) after each class. Statements assessed perceived competence, autonomy and relatedness. SAs also wrote about the areas that they found helpful and how they would improve sessions. After the final session, a *PILATES Connect* program evaluation (Appendix E) used the same 7-point scale to assess competence, autonomy and relatedness support. SAs also responded to statements on recommending the program to other SAs and interest in participating in future group exercise. SAs gave feedback on components of *PILATES Connect* that were most helpful, as well as recommendations for improvement.

**Focus groups.** SAs were invited to participate in focus groups at program completion. Using a semi-structured interview (Appendix F), SAs shared about their expectations for the transition out of college sports, as well as ideas for what could help them adhere to and enjoy future physical activity. They discussed elements of *PILATES Connect* that enhanced their competence, empowered them to make their own choices and facilitated connection with other SAs. They provided suggestions for improving *PILATES Connect* and explained what they would tell other SAs about the program. Finally, participants shared how *PILATES Connect* influenced their view of the transition

and listed types of physical activity that they might choose to pursue after college.

Interested SAs participated in focus groups two days after completing the program.

## **Procedures**

*PILATES Connect* met once each week for six weeks in the group exercise room in the college's fitness center. This provided ample time for individual progression in Pilates training. It was also a manageable commitment for SAs with full schedules.

***PILATES Connect Program Design.*** The 60-minute sessions included 35 minutes of Pilates training, 15 minutes of reflection and discussion and 10 minutes of evaluation. The researcher was a certified Mat III Pilates instructor through The American Aerobic Association International and International Sports Medicine Association and led the program. Instructional style emphasized attention to the present, enjoyment, improvement, self-awareness of movement and opportunities to connect with other participants. Pilates principles of control, precision, fluidity, center, concentration, breath, imagination and integration formed the foundation for the classes (Siler, 2006). SAs were encouraged to advance or modify exercise components. The program used body weight training for two weeks and then progressed to medicine balls (Appendix G).

SAs received a reflection and discussion guide for use within *PILATES Connect*. Topics within the guide included future physical activity goals, action steps, personal areas of confidence, social support and program experiences. Each session included three questions to encourage personal journaling reflection and to enhance discussion among participants (Appendix H). Through the Pilates training, reflection and discussion, it was

expected that final-year SAs would experience competence, autonomy and relatedness support as they prepared to transition to lifetime physical activity (Table 1).

*Table 1*

*Program Components and Strategies*

<b>Component</b>	<b>Objectives</b>	<b>Program strategies</b>
Competence	Develop competence in Pilates, a lifetime activity	Progressive Pilates builds physical activity skills outside of college sports
	Strengthen self-efficacy for future physical activity	Reflection questions emphasize individual growth in Pilates and future action steps
Autonomy	Encourage personal choice in Pilates training	Pilates exercises are modified or advanced with movement at a self-selected pace
	Develop initiative for choosing future physical activity options	Reflection questions target personal goals and motivators for future activity
Relatedness	Develop connections with peers who are approaching transition	SAs participate in a group exercise Pilates class and small group discussions with peers
	Consider strategies for physical activity support after college	Reflection questions highlight social support strategies for physical activity as alumni

## **Data Analysis**

Changes in participant responses to the BPNES and BREQ-3 from pre to post-program were analyzed with a paired sample t-test. Repeated measures ANOVA was used to compare ratings of competence, autonomy and relatedness across the six sessions. Written participant feedback was grouped into helpful program components and areas for improvement. Session and program ratings were analyzed descriptively for means and frequencies. Focus group responses were audio-recorded, transcribed and organized into the categories of 1) personal transition views, 2) components of *PILATES Connect* that supported basic psychological needs satisfaction, 3) components of *PILATES Connect* that could be improved for sustainability and 4) participant ideas for future physical

activity. Focus group responses were reviewed with multiple readings. Accuracy was clarified by comparing original recordings with time stamped transcriptions.

## **Results**

A primary aim of this study was to assess the feasibility of offering *PILATES Connect* for final-year SAs at the researcher's institution. An additional aim was to evaluate how the program prepared SAs to transition to lifetime physical activity by supporting self-determined motivation and basic psychological needs satisfaction.

### **Aim 1: Feasibility**

With an adherence rate of 94.4%, participants consistently attended *PILATES Connect*. A morning and afternoon *PILATES Connect* class improved total participation, in comparison to pilot participation when one class was offered. Focus group discussions highlighted the need for this program at the institution. Four SAs expressed concern with motivation and consistency for future physical activity. Four SAs noted the challenge of not having scheduled practices and competitions in the future. Five SAs, however, looked forward to new opportunities and rest. Representative participant comments included:

I think I'm just going to be feeling a lot of the unknown, at least for the first month or two, like I don't know what to do with myself.

It's also exciting to figure that out. I think it'll be fun. And there's no pressure of having to do things anymore, which is nice.

Participants strongly recommended *PILATES Connect* to other SAs ( $M = 6.8$ ) and would consider doing Pilates or other group exercise in the future ( $M = 6.8$ ). Six SAs highlighted the benefits of participating with others in a small group environment. Five

SAs enjoyed learning to move more fluidly, while three SAs appreciated time to slow down and think about the future. Representative perceived program benefits included:

Talking with others about future physical activity expectations/goals. Seeing none of us are alone in this situation of transition.

Conversing with smaller groups about the reflection questions. The idea that everything we were doing we had a choice.

Being able to go at my own pace and slowing things down. Taking control of my movements. Being able to connect with other senior athletes.

When asked how to improve the program, three SAs recommended that *PILATES Connect* meet more often, one SA suggested an initial icebreaker activity and three SAs would have enjoyed more emphasis on stretching. Five SAs thought it would be beneficial to have previous participants encourage others for future involvement. Three participants would tell upcoming final-year SAs that Pilates transfers to sport-specific training and four participants would encourage a willingness to try something new:

I would just say be an advocate for something new, do something different. And don't be intimidated by it. It was a really welcoming environment obviously, too.

It's a different way to train, a lot of people haven't done it before. So just try it out and see if you like it. Especially for senior athletes, it may be another possibility for the future. I would tell them that. Just you never know until you do it.

At program conclusion, participants identified specific forms of physical activity that they would be interested in pursuing after college sports conclude. Three SAs expressed interest in cycling or running, four SAs would like to participate in Pilates or yoga, two SAs want to progress in lifting, one SA wants to try barre, and one SA looks

forward to skiing and snowboarding. Only one SA specifically expressed interest in a recreational league to participate in the sport that she played during college.

**Aim 2: Evaluation of Program Support**

*PILATES Connect* was evaluated as supportive to basic psychological needs satisfaction throughout the program. Through session feedback forms, participants reported their perceived competence, autonomy and relatedness at each session (Table 2). Ratings of perceived autonomy and relatedness remained consistently high throughout the six sessions. Perceived competence ratings increased significantly from the first to sixth sessions,  $F(5, 3) = 29.7, p = .009$ .

*Table 2*

*Session Evaluations of Basic Psychological Needs Support*

<b>Evaluation component</b>	<b>Session 1 <i>M</i></b>	<b>Session 2 <i>M</i></b>	<b>Session 3 <i>M</i></b>	<b>Session 4 <i>M</i></b>	<b>Session 5 <i>M</i></b>	<b>Session 6 <i>M</i></b>	<b>Sessions 1-6 <i>M</i></b>
I think I am pretty good at this activity. (Competence)	4.1	4.2	4.5	5	5.4	5.7	4.8
I did this activity because I wanted to. (Autonomy)	6.6	6.6	6.3	6.5	6.6	6.8	6.6
I felt like I could really trust these people. (Relatedness)	6	6	6.5	6.5	6.7	6.5	6.4

*Note.* 7-point Likert scale (1 = Not at all true, 7 = Very true)

Written feedback from SAs after each *PILATES Connect* session highlighted areas that participants found beneficial. Ten SAs wrote about the fitness benefits of Pilates, including flexibility, core stability and controlled movement. Eleven participants

discussed how the training progressions and new challenges were helpful. Seven SAs highlighted the shared experience with others and the opportunity to talk in small groups, while five SAs appreciated a relaxed environment to clear their minds.

Although SA feedback was positive, pre and post-program BPNES scores did not reveal significant changes in basic psychological needs satisfaction. Likewise, few differences were observed for the BREQ-3 scores. Participants began the program at fairly high levels of psychological needs satisfaction and self-determined motivation (i.e., identified, integrated, intrinsic regulations), which remained consistent over the six weeks (Table 3). Effect sizes were calculated with Hedges *g*, but showed relatively low effects. The BPNES competence measurement approached a medium effect at .42.

*Table 3*

*Comparison of Pre and Post-program BPNES and BREQ-3*

Measurement	Pre-program			Post-program			<i>t</i>	<i>p</i>	Hedges <i>g</i>
	Item <i>M</i>	Total <i>M</i>	<i>SD</i>	Item <i>M</i>	Total <i>M</i>	<i>SD</i>			
BPNES Autonomy	3.75	15.00	2.00	3.60	14.42	1.16	1.25	.24	.33
BPNES Competence	3.58	14.33	2.19	3.83	15.33	2.23	-1.48	.17	.42
BPNES Relatedness	4.09	12.25	2.01	4.22	12.67	1.78	-1.10	.30	.20
BREQ-3 Amotivation	.23	.92	2.11	.19	.75	2.05	.52	.62	.07
BREQ-3 External Regulation	1.06	4.25	3.33	1.25	5.00	3.77	-1.83	.10	.20
BREQ-3 Introjected Regulation	2.15	8.58	3.18	2.44	9.75	2.93	-3.39	.01	.36
BREQ-3 Identified Regulation	3.58	14.33	1.92	3.44	13.75	1.96	1.47	.17	.28
BREQ-3 Integrated Regulation	2.98	11.92	3.34	2.90	11.58	2.50	.60	.56	.11
BREQ-3 Intrinsic Regulation	3.04	12.17	3.07	3.08	12.33	2.84	-.48	.64	.05

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Note. BPNES 5-point scale (1 = I don't agree at all, 5 = I completely agree)  
 BREQ-3 5-point scale (0 = Not true for me, 4 = Very true for me)

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Participants enhanced their competence in Pilates, enjoyed the freedom to modify or advance exercises and benefitted from hearing ideas from other SAs during the sessions. In the final feedback form, SAs provided positive ratings in five areas of assessment. During focus groups, participants verbalized specific ways in which *PILATES Connect* supported satisfaction of basic psychological needs. Evaluation means and sample focus group responses are provided in Table 4.

Table 4

Summary of SA Feedback on Basic Psychological Needs Support

Program evaluation statement	M rating	Focus group sample responses
Because of <i>PILATES Connect</i> , I feel more confident in my ability to transition to meaningful physical activity after the conclusion of college athletics. (Competence)	5.5	<p>“It was like this stepping-stone, it was just the first step to trying new things. It gave me confidence.”</p> <p>“By the end I was like, “Okay, I feel more smooth and purposeful with movement without having to really think what am I doing.” So I think that was good from a confidence perspective... Like I can translate in different environments.”</p>
Because of <i>PILATES Connect</i> , I feel like I have greater control over my physical activity choices after the conclusion of college athletics. (Autonomy)	5.9	<p>“You had the choice of whether or not you really want to push yourself to the limit or not go as hard.”</p> <p>“I think it also reflects on the weighted balls we use, like how heavy did you want to use? What would be best for you? You had the choice.”</p>
Because of <i>PILATES Connect</i> , I feel more connected to other student-athletes who participated with me. (Relatedness)	6	<p>“It was nice to be in a class where other people are learning the same thing and so you recognize that you're not alone in this situation. That everyone else is going through the same thing, so being able to relate to other people is really helpful.”</p> <p>“It was also a positive atmosphere to be with new people but also try new things and just sort of have fun and relax.”</p>

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Note. 7-point Likert scale (1 = Not at all true, 7 = Very true)

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During focus groups, final-year SAs noted how their views of the transition had changed through participation in *PILATES Connect*. Four SAs talked about redefining physical activity after college sports, with new ideas that interested them. Three SAs felt more positive, as they looked forward to the next chapter when they will have choices. An additional three SAs appreciated knowing that they were not alone in their feelings as they approached the transition. SAs recognized a broader view of future physical activity:

It's the next chapter in your life, so it's something to look forward to, and just making the most of it.

I think going through this made me realize that I'm going to look into classes like this in the future, that are fun and not the gym.

Since I did Pilates, who knows what could happen! I think it gave me more openness to find new things.

### **Discussion and Implications**

The six-week *PILATES Connect* program was feasible, as demonstrated by strong adherence rates and positive feedback from final-year SAs. Resources contributing to feasibility included the availability of a group exercise room in the fitness center and the researcher's interest in teaching the class. Athletics coaches supported the initiative and recommended the program to their SAs. In addition, the institutional culture promotes holistic wellness support. *PILATES Connect* was offered at no cost to the school and provided tailored physical and psychological support for final-year SAs.

Participants agreed that the program supported their competence, autonomy and relatedness in physical activity as they approached the transition to alumni. Final-year SAs displayed a willingness to talk about the transition during this fall semester program.

Attendance remained strong throughout the program, which highlighted the interest in this type of programming among both in-season and off-season SAs. Participants consistently provided feedback on the benefits of a scheduled time to slow down, experience a new mode of mindful physical training and spend time with their peers.

At pre-program assessment, SA self-determined motivation and basic psychological needs satisfaction were fairly high, as assessed in the BPNES and BREQ-3. This likely contributed to the lack of significant changes in these measures at post-program assessment. In the future, it would be relevant to consider additional tools for assessing self-determined motivation within an athletic, college-aged population.

Participants did agree, however, that *PILATES* supported their confidence in transitioning to lifetime activity, enhanced their feelings of control over their choices and helped them connect to other SAs. Session evaluations showed consistently high ratings of perceived autonomy and relatedness throughout the program. Perceived competence in Pilates significantly increased from the initial session to the final session. Participants experienced progress in a new form of physical activity within a relatively short time of six weeks. Final-year SAs noted that *PILATES Connect* served as a stepping-stone toward building personal confidence in new forms of activity beyond college sports.

Participants valued their autonomy within the program, such as choosing their own pacing, level of training intensity and medicine ball weights. SAs enjoyed the time to discuss the transition with their peers and felt less alone through program participation. Relatedness was supported within a relaxed atmosphere for honest discussion. In the future, it would be relevant to see if a shorter program, possibly four weeks, could

provide similar support. With full academic and athletic schedules, final-year SAs may find it challenging to agree to additional commitments, such as transitional programming.

Several SAs actually responded that they would enjoy a longer *PILATES Connect* program. Others stated that it would be beneficial to recruit more participants. They recommended that past participants encourage upcoming final-year SAs to try something new, highlighting the benefits of Pilates for both performance and transition preparation. Participants strongly agreed that they would recommend *PILATES Connect* to other SAs and would consider doing Pilates or another type of group exercise in the future.

Recognizing the various ways in which SAs will define personally meaningful future physical activity is central within this conversation. SA alumni have their own unique experiences, interests and redefined goals, which will influence their physical activity journeys after college sports conclude. It is vital that we support final-year SAs as they explore ideas for physical activity that they feel inherently motivated to adopt into their lifestyles. For example, the variety of SA physical activity interests verbalized by participants in this study included cycling, running, yoga, Pilates, barre classes, plyometrics and snowboarding. Only one SA actually expressed interest in playing her college sport recreationally, highlighting the importance of exposure to other forms of activity. During focus groups after the conclusion of *PILATES Connect*, final-year SAs discussed their upcoming personal transitions with greater confidence and clarity.

There were several limitations to the current research study. The sample size was small, represented five different collegiate sports and only included SAs who identified themselves as white. The institution competes in NCAA Division III athletics. It is

important to recognize these characteristics, as they may limit the generalization of the implications and recommendations for other final-year SAs and institutions. Additional research that spans Division I, Division II and community colleges would help broaden the knowledge base for SA transition support. Recruiting SAs from a greater diversity of collegiate sports and racial backgrounds would also improve the depth of this study.

Adherence rates, session and program evaluations and focus group feedback provided support for continuing to offer *PILATES Connect*. Participants reported sustained feelings of autonomy and relatedness and showed significant improvement in perceived competence in Pilates training. Participants would recommend the program to others and were able to verbalize specific ways in which the program positively affected their view of the transition. This included identifying specific personal options for physical activity after college sports conclude.

Future work will emphasize a core curriculum that can be customized for other institutions of higher education and for different group exercise classes. Investigating the ideal length and timing of the program and focusing on recruitment strategies will enhance effectiveness. Feedback from coaches and SA alumni could also provide new insights for tailoring transition support. The findings from this project provide an initial investigation of physical activity transition support that could eventually be tailored for populations such as high school SAs, professional athletes and those approaching military retirement. Continued progress in SA physical activity transition support will require collaboration from stakeholders such as athletics departments, alumni, educators and health and fitness professionals.

## **CHAPTER II**

### **DISSEMINATION**

Feedback from implementing the *PILATES Connect* program at the researcher's home college was compiled into an evaluation report. A single page executive summary (Appendix I) and infographic (Appendix J) were presented to the Athletics Department in December 2018. The full evaluation report was prepared during the spring of 2019. This report included relevant background on SA transitions, an overview of the *PILATES Connect* program, a summary of results and future recommendations. The goals for the evaluation report were to communicate clearly the effectiveness of *PILATES Connect* and to promote continued collaboration with the Athletics Department.

#### ***PILATES Connect* Evaluation Report**

**Submitted to Home College Athletics Department, Spring 2019**

#### **Executive Summary**

The *PILATES Connect* program supports final-year student-athletes (SAs) in the transition to meaningful physical activity after college sports conclude. *PILATES Connect* helps SAs build competence in new skills, adapt exercises to meet their needs and experience community with other SAs. The program was evaluated for feasibility and the extent to which SAs felt supported in their transition to lifetime physical activity. Twelve final-year SAs participated in *PILATES Connect* in the fall of 2018. SAs completed session and program evaluations and focus group interviews. By supporting

SAs in all stages of their careers, we promote physical and psychological wellness. The following list summarizes feedback from *PILATES Connect*:

- The program was feasible with strong adherence rates.
- SAs recommended the program for others.
- Individual sessions and program supported autonomy, competence and relatedness.
- SAs significantly increased competence in Pilates, enjoyed making movement choices and benefited from the time to discuss the transition with peers.
- SAs verbalized specific ways in which the program supported their transition.
- SAs suggested specific forms of activity that they might pursue in the future.

### **Introduction**

Years of sport-specific training may leave former SAs without a foundation for sustainable lifetime physical activity. During their athletic careers, many SAs train to improve performance and may not fully understand the value of physical activity for physical and psychological health (Theberg, 2007). There is a need for a physical activity transition curriculum to promote lifetime physical and psychological wellness for SAs.

### **SA Transitions**

Over 480,000 SAs compete in NCAA sports each year (NCAA, 2015), more than 95% of whom will not continue their athletic careers at a competitive level after graduation. Research suggests that former SAs have reduced physical activity levels in comparison to current SAs and may be no more active or fit than non-SA alumni (Reifsteck, Gill, & Brooks, 2013; Simon & Docherty, 2017; Sorenson, Romano, Azen, Schroeder, & Salem, 2015). Transition barriers include the loss of team support (Fuller,

2014), less motivation without specific goals (Plateau, Petrie, & Papathomas, 2017), and identity-related changes (Fuller, 2014; Reifsteck, Gill, & Labban, 2016).

***PILATES Connect***

*PILATES Connect* supports final-year SAs in the transition to enjoyable and sustainable physical activity after the conclusion of college sports. The program is rooted in Self-Determination Theory (SDT), with an emphasis on intrinsic reasons for physical activity, which promote enjoyment and adherence (Puente & Anshel, 2010; Wasserkampf, Silva, & Teixeira, 2017). *PILATES Connect* supports basic psychological needs for competence, autonomy and relatedness, which correlate with increased intrinsic motivation for physical activity (Ryan, Williams, Patrick, & Deci, 2009). *PILATES Connect* evaluation aims and measures are highlighted in Table 5.

*Table 5*

*Evaluation Crosswalk*

<b>Evaluation aims</b>	<b>Session attendance</b>	<b>Session evaluations</b>	<b>Program Evaluation</b>	<b>Focus group</b>
Assess feasibility of offering <i>PILATES Connect</i> at the college	<b>X</b>	<b>X</b>	<b>X</b>	<b>X</b>
Evaluate how <i>PILATES Connect</i> prepares SAs to transition to lifetime activity		<b>X</b>	<b>X</b>	<b>X</b>

*PILATES Connect* met once each week for six weeks. The sessions included 35 minutes of progressive Pilates training, 15 minutes of reflection and discussion and 10 minutes of evaluation. SAs received a reflection and discussion guide with the topics of

future physical activity goals, personal confidence, social support and experiences within the program. Program objectives and strategies are shown in Figure 1.

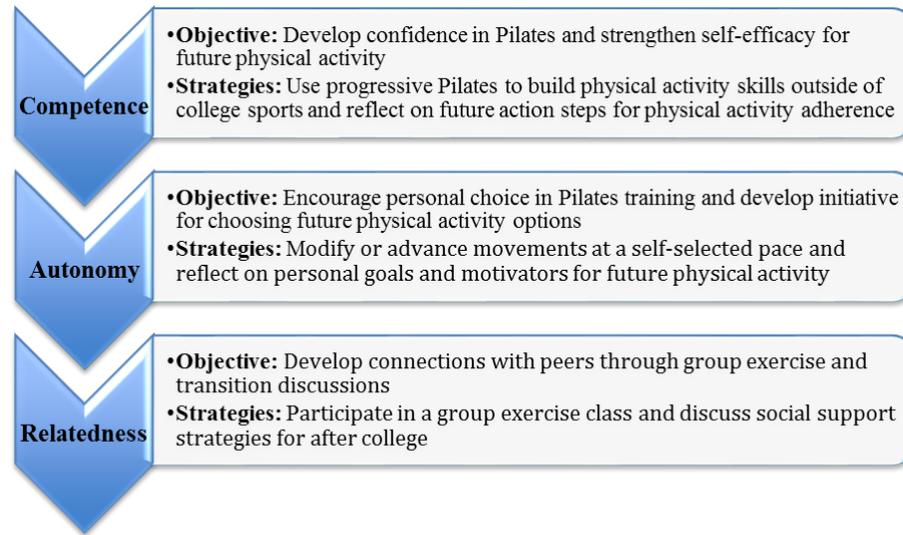


Figure 1. Objectives and Strategies of PILATES Connect

## Methods

### Participant Recruitment

Participants were recruited through an email that clarified the purpose of the research and criteria for involvement. The final sample ( $n = 12$ ) represented women's soccer ( $n = 6$ ), men's baseball ( $n = 3$ ), women's field hockey ( $n = 1$ ), men's lacrosse ( $n = 1$ ), and men's track and field ( $n = 1$ ). A few participants had moderate experience with Pilates ( $n = 3$ ), while most had little to no experience ( $n = 9$ ).

### Data Collection

Attendance was taken at each session to calculate adherence. SAs provided evaluation feedback at the conclusion of each session and at the end of the program

regarding perceived autonomy, competence and relatedness. SAs were asked if they would recommend the program to other SAs and if they were interested in future group exercise opportunities. SAs wrote about *PILATES Connect* aspects that were most helpful and aspects that could be improved.

Focus group interviews were conducted within one week of *PILATES Connect* program completion. SAs discussed their upcoming transition out of college athletics. They provided feedback on their experience with *PILATES Connect*, including areas that supported basic psychological needs satisfaction and areas for improving participant recruitment. They also discussed future physical activity options of personal interest.

### **Data Analysis**

Participant ratings of competence, autonomy and relatedness were compared across the six sessions. Written feedback from SAs was grouped into sub-categories of helpful program components and areas for improvement. Focus group responses were organized into the categories of 1) personal transition views, 2) components of *PILATES Connect* that supported basic psychological needs satisfaction, 3) components of *PILATES Connect* that could be improved for recruitment and sustainability and 4) participant ideas for future physical activity.

### **Results**

With an overall adherence rate of 94.4%, SAs consistently attended *PILATES Connect* sessions. The focus of the program seemed relevant, as four SAs expressed concern with motivation and consistency for future physical activity during the focus groups. Four SAs also noted the upcoming challenge of not having scheduled practices

and competitions. Five SAs, however, spoke of looking forward to trying new things and resting. Representative participant comments on the approaching transition included:

I think I'm just going to be feeling a lot of the unknown... at least for the first month or two, like I don't know what to do with myself.

It's also exciting to figure that out. I think it'll be fun. And there's no pressure of having to do things anymore, which is nice.

When asked how to improve recruitment, five SAs suggested that previous participants reach out to upcoming final-year SAs to encourage involvement. Three participants would discuss the transfer of Pilates to sport-specific training and four SAs would encourage others to try something new that could benefit them for the future:

It's a different way to train, a lot of people haven't done it before. So just try it out and see if you like it. Especially for senior athletes, it may be another possibility for the future. I would tell them that. Just you never know until you do it.

I would just say be an advocate for something new, do something different. And don't be intimidated by it. It was a really welcoming environment obviously, too.

*PILATES Connect* was evaluated as supportive to basic psychological needs throughout the program. Using a Likert scale (*1 = Not at all true, 7 = Very true*), participants reported perceived competence (Figure 2), autonomy (Figure 3) and relatedness (Figure 4) at each session. Ratings of perceived autonomy and relatedness remained consistently high throughout the six sessions. Perceived competence ratings increased significantly from the first to sixth sessions. In their written feedback, ten SAs highlighted the fitness benefits of Pilates. Eleven SAs found the new training challenges

to be helpful. Seven SAs emphasized the shared experience and opportunity to talk in small groups, while five SAs appreciated a relaxed environment to clear their minds.

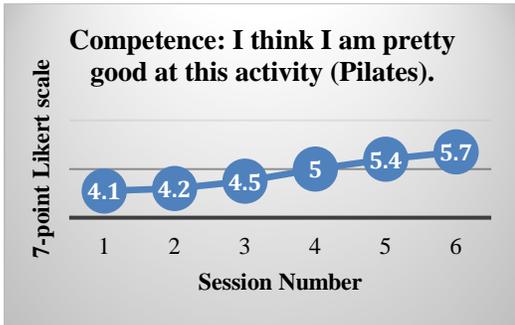


Figure 2. Perceived SA Competence

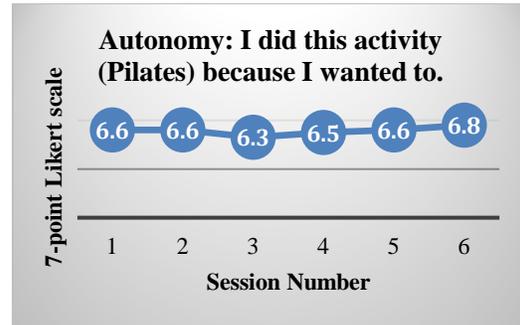


Figure 3. Perceived SA Autonomy

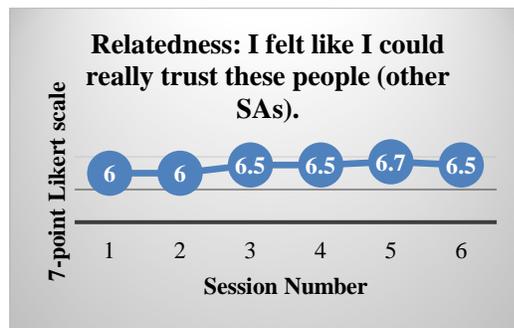


Figure 4. Perceived SA Relatedness

Participants strongly recommended the program for other SAs and would consider participating in Pilates or another form of group exercise again in the future. Expressed benefits that were representative among SAs included:

Talking with others about future physical activity expectations/goals. Seeing none of us are alone in this situation of transition.

Being able to go at my own pace and slowing things down. Taking control of my movements. Being able to connect with other senior athletes.

SAs noted how their views of the transition had changed through participation in *PILATES Connect*. Four SAs talked about redefining physical activity beyond college sports, with new ideas that interest them. Three SAs felt more positive as they looked forward to the next chapter of life. An additional three SAs appreciated knowing that they were not alone in their feelings. SAs identified physical activities that they might pursue after college sports, including cycling, running, Pilates, yoga, lifting, barre and snowboarding. SAs recognized a broader view of future physical activity:

It's the next chapter in your life, so it's something to look forward to, and just making the most of it.

Since I did Pilates, who knows what could happen! I think it gave me more openness to find new things.

During the program, participants enhanced their competence in Pilates, enjoyed the freedom to modify or advance exercises and benefitted from hearing ideas from other SAs. Participants verbalized specific ways in which *PILATES Connect* supported satisfaction of basic psychological needs during focus groups (Table 6).

*Table 6*

*SA Responses on Basic Psychological Needs Support*

<b>Program evaluation statement</b>	<b>Mean rating</b>	<b>Focus group sample responses</b>
Because of <i>PILATES Connect</i> , I feel more confident in my ability to transition to meaningful physical activity after the conclusion of college athletics. (Competence)	5.5	<p>“It was like this stepping-stone, it was just the first step to trying new things. It gave me confidence.”</p> <p>“By the end I was like, "Okay, I feel more smooth and purposeful with movement without having to really think what am I doing." So I think that was good from a</p>

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		confidence perspective... Like I can translate in different environments.”
Because of <i>PILATES Connect</i> , I feel like I have greater control over my physical activity choices after the conclusion of college athletics. (Autonomy)	5.9	<p>“You had the choice of whether or not you really want to push yourself to the limit or not go as hard.”</p> <p>“I think it also reflects on the weighted balls we use, like how heavy did you want to use? What would be best for you? You had the choice.”</p>
Because of <i>PILATES Connect</i> , I feel more connected to other student-athletes who participated with me. (Relatedness)	6	<p>“It was nice to be in a class where other people are learning the same thing and so you recognize that you're not alone in this situation. That everyone else is going through the same thing, so being able to relate to other people is really helpful.”</p> <p>“It was also a positive atmosphere to be with new people but also try new things and just sort of have fun and relax.”</p>

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*Note.* 7-point Likert scale (1=not at all true, 7=very true)

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### **Discussion of Findings**

This project aimed to determine the feasibility of offering *PILATES Connect* and the extent to which the program supported SAs in the transition to lifetime physical activity. *PILATES Connect* was evaluated as a practical opportunity to support final-year SAs, with strong program adherence. Campus resources included the group exercise room in the fitness center and the researcher’s interest in teaching the class. The institutional culture promotes holistic wellness and *PILATES Connect* provided tailored physical and psychological support for final-year SAs at no cost to the school.

Participants agreed that *PILATES Connect* supported their confidence in transitioning to lifetime activity, enhanced their feelings of control over their choices and helped them connect to other SAs. SAs progressed in perceived competence in Pilates during the six weeks. SAs noted that *PILATES Connect* served as a stepping-stone toward new forms of activity beyond college sports. Participants enjoyed choosing their pace,

training intensity and medicine ball weight. SAs felt less alone as they discussed the transition with peers. Participants agreed that they approached the transition with greater confidence and clarity as *PILATES Connect* progressed. *PILATES Connect* equipped final-year SAs with intentional time to consider personally motivating and sustainable physical activity options after college sports.

### **Future Programming Recommendations**

Adherence rates, session and program evaluations and focus group feedback provide evidence for continuing *PILATES Connect*. To provide year-round transitional support, the institution will offer *PILATES Connect* during the fall semester and integrate the Moving On! program within a spring semester chapel series. Supporting SAs in all stages of their careers promotes wellness during their time at the college and as alumni.

### **Conclusion**

Throughout *PILATES Connect*, participants reported sustained feelings of autonomy and relatedness. SAs significantly increased personal competence in Pilates as a form of physical activity. They enjoyed making choices with exercise variations and benefited from time to discuss the transition with peers. Participants recommended the program to others and verbalized specific ways in which the program positively influenced their view of the transition. Feedback from athletics coaches and SA alumni will provide new insights for tailoring future transition support within *PILATES Connect*.

### **CHAPTER III**

#### **ACTION PLAN**

This dissertation project provides evidence for the feasibility and effectiveness of *PILATES Connect* at my home college. *PILATES Connect* supports self-determined motivation and basic psychological needs satisfaction for final-year SAs in the transition to lifetime physical activity. This dissertation work lays a foundation for continued positive impact in the area of student-athlete transitions. My first level of professional influence continues with my own colleagues and students. Key findings and recommendations from the *PILATES Connect* study were compiled into a program evaluation report for presentation to the Athletics Department at the college. I attended an initial Athletics Department meeting in December 2018 to present a single page executive summary and an infographic. This was an opportunity to summarize the findings in a practical and visual format. The full report, as seen in Chapter 2, was provided to the Athletics Director and Assistant Athletics Director upon completion of the dissertation in the spring of 2019. I will continue to attend an Athletics Department meeting each semester to promote open communication and collaboration for SA transition support.

I presented an inclusive excellence lecture on my research in the fall of 2018 on campus. This lecture provided an avenue to share my dissertation work with campus colleagues outside of the Athletics Department and Health, Nutrition and Exercise

Science (HNES) Department. The lecture was titled *Confidence, Choice, and Connection: Moving into Meaningful Lifetime Activity for All*. It illuminated the importance of supporting basic psychological needs and exploring each person's unique story in promoting personal wellness. Since giving this lecture, I have had ongoing conversations about this research with students and colleagues. Curriculum that supports competence, autonomy and relatedness is relevant within the institution's general education wellness courses and employee fitness classes, as well. Supporting basic psychological needs satisfaction in physical activity extends beyond transitional populations and there are opportunities to investigate additional applications of this work at my institution.

Institutional websites and social media sites for the Athletics Department and the HNES Department will highlight the *PILATES Connect* program in the future. The effective use of social media can facilitate connections with others who are interested in SA transition support, which could lead to future collaborations. Transitional programming will be adapted and offered for SAs at my home institution each year as a sustainable area of research and service. To provide yearlong support for final-year SAs, the *PILATES Connect* program will be offered each fall, with the Moving On! program integrated within a chapel series each spring. I am currently working with the college's Athletics Department and sports ministry organization on these initiatives.

Looking toward the future, I plan to build connections with the athletics conference in which the college competes. Conference-level impact includes hosting an educational symposium on transitional strategies for coaches and SAs or writing an

article for the conference website. I am in consistent communication with the Assistant Athletics Director regarding opportunities to support SAs at our institution and beyond. I hope to provide practical resources that can help pave the way for other institutions of higher education to implement supportive strategies for SAs. This involves promoting a general physical activity transition curriculum that could be tailored by other fitness instructors within group exercise classes such as taekwondo, spin and yoga. *PILATES Connect* will gain traction at my own institution, but the positive impact of this physical activity transition program can expand to other NCAA institutions.

To encourage greater impact, it is essential to emphasize connections with people and organizations who can influence a broader distribution. I will be presenting a poster of this dissertation work at the American College of Sports Medicine (<http://www.acsm.org/>) annual meeting in Orlando, Florida on May 30, 2019. Presenting at this conference creates the potential for building connections with other individuals who are interested in SA transition work. Opportunities to be involved with the APPLE Training Institute for Promoting Student-Athlete Wellness and Substance Abuse Prevention (<https://apple.studenthealth.virginia.edu/>) will also be pursued. College representatives have attended the Apple conference in previous years. I have spoken with the Assistant Athletics Director about future attendance and opportunities to our work. Looking ahead to the January 2020 conference, there are plans to submit a presentation proposal on relevant programming for SAs in the transition to lifetime activity.

Upon completion of the dissertation, I want to begin professional scholarship on the physical activity transition experiences of final-year and former SAs. Through focus

group and written feedback collected over the past few years, this could include illuminating the personal perspectives of SAs. Feedback can be organized into categories such as primary transition challenges, strategies that have been most helpful in a successful transition and recommendations for effective future support. This type of professional article would be of interest to many within the field of kinesiology and would continue the important conversation on SA lifetime wellness.

The ultimate goal of this ongoing research is to improve physical activity transitional programming for SAs. Supporting SAs as they transition to physically active lifestyles beyond graduation is an interdisciplinary issue. Athletics departments, kinesiology professionals in higher education and health and fitness professionals have opportunities to influence the experiences of SAs and SA alumni. My dissertation emphasis may also provide opportunities for programming translation to other populations. Additional transitioning populations include graduating high school student-athletes, professional athletes who retire or sustain a career-ending injury and people who retire from active duty in the military. Supporting effective physical activity transitions for individuals with a variety of unique experiences can further the opportunity for collaboration and positive impact on physical and psychological wellness.

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## APPENDIX A

### RECRUITMENT EMAIL

Recruitment email to SAs in their final year of competition (August-September 2018)

Good morning!

A free six-week ***PILATES Connect*** program for student-athletes in their final year of college competition will be offered from September 18<sup>th</sup> through October 23<sup>rd</sup>. You are invited to participate regardless of whether your sport season occurs in the fall, winter, or spring. The program meets on Tuesdays for 60-minutes, from 2:30-3:30 PM in the group exercise room in the fitness center. ***PILATES Connect*** involves mindful, self-paced Pilates training for core stability, flexibility, balance, and breathing efficiency. ***PILATES Connect*** also includes discussion on the transition to meaningful physical activity after graduation. As part of this program, you are invited to participate in a research study that looks at self-determined motivation for exercise. This includes completing short pre and post-program surveys and session evaluations. You are also invited to a 60-minute focus group after the program. Student-athletes who complete the program will receive a new yoga mat for future use. This research contributes to the development of meaningful strategies to support final-year student-athletes.

**Participation is voluntary. You must be 18 or older to participate in the research study.**

**Exclusion criteria include:**

**Student-athletes who are not in their final year of competition.**

**Student-athletes with an injury in which a Pilates program would be contraindicated. (Athletes with an injury history will be cleared by the Certified Athletic Trainer for their respective sport.)**

Mindy Smith, Lecturer of Applied Health Science and former Women's Soccer player, will lead the Pilates program. Mindy is also a doctoral student at UNCG and this research is for her dissertation. If you are interested in participating, please contact her at (email address) no later than **Monday, September 10<sup>th</sup>**. We hope you will consider being involved in this meaningful program that can enhance your current training and help prepare you for an active future!

Thanks for your time and consideration!

Respectfully,  
Mindy Smith

## APPENDIX B

### UNCG HUMAN CONSENT FORM

**Project Title:** PILATES Connect: Support for Collegiate Student-Athletes in the Transition to Meaningful Lifetime Physical Activity

**Principal Investigator:** Mindy Smith

**Faculty Advisors:** Dr. Diane Gill and Dr. Erin Reifsteck

Participant's Name: \_\_\_\_\_

#### **What are some general things you should know about research studies?**

You are being asked to take part in a research study. Your participation in the study is voluntary. You may choose not to join, or you may withdraw your consent to be in the study, for any reason, without penalty.

Research studies are designed to obtain new knowledge. This new information may help people in the future. There may not be any direct benefit to you for being in the research study. There also may be risks to being in research studies. If you choose not to be in the study or leave the study before it is done, it will not affect your relationship with the researcher or the University of North Carolina at Greensboro. Details about this study are discussed in this consent form. It is important that you understand this information so that you can make an informed choice about being in this research study.

You will be given a copy of this consent form. If you have any questions about this study at any time, you should ask the researchers named in this consent form. Their contact information is below.

#### **What is the study about?**

This is a research project. Your participation is voluntary. I would like to gather feedback on your experience with the six-week PILATES Connect program, which is designed to support final-year student-athletes (SAs) in the transition to meaningful physical activity after college sports.

#### **Why are you asking me?**

You are being asked to participate because you are a final-year SA at [College Name]. You must be 18 or older to participate in the research study. Exclusion criteria for this study includes: SAs who are not in their final year of competition.

SAs with an injury in which a Pilates program would be contraindicated. (SAs with an injury history will be cleared by the Certified Athletic Trainer for their respective sport.)

#### **What will you ask me to do if I agree to be in the study?**

There will be six 60-minute Pilates sessions (35 minutes of exercise, 15 minutes of reflection and discussion, 10 minutes of evaluation). This research project involves completion of the Basic Psychological Needs in Exercise Scale and Behavioural Regulation in Exercise Questionnaire at the beginning and conclusion of the program, brief surveys (less than 5 minutes each) at the conclusion of each session, and participating in a focus group (lasting approximately 1 hour) after

the program ends. You will receive a journal with reflection and discussion questions that will be used during the sessions. This is yours to keep and no one else will look at this journal.

**Is there any audio/video recording?**

The focus group interview will be audio recorded and then transcribed. Because your voice will be potentially identifiable by anyone who hears the recording, your confidentiality for things you say on the recording cannot be guaranteed although the researcher will try to limit access to the recording as described below.

**What are the risks to me?**

Risk of pain, discomfort, and injury is rare. Performing physical activity (Pilates), however, involves basic risk. The use of a certified instructor and the emphasis on individual modification and body awareness decreases this risk. SAs will be encouraged to move in a way that does not cause pain and to stop if they are concerned about injury. The Institutional Review Board at the University of North Carolina at Greensboro has determined that participation in this study poses minimal risk to participants. If you have questions, want more information or have suggestions, please contact Mindy Smith ([mbsmith9@uncg.edu](mailto:mbsmith9@uncg.edu), x7055) AND Dr. Diane Gill ([dlgill@uncg.edu](mailto:dlgill@uncg.edu)) or Dr. Erin Reifsteck ([ejreifst@uncg.edu](mailto:ejreifst@uncg.edu)). If you have any concerns about your rights, how you are being treated, concerns or complaints about this project or benefits or risks associated with being in this study please contact the Office of Research Integrity at UNCG toll-free at (855)-251-2351.

**What if I get injured?**

UNCG is not able to offer financial compensation nor to absorb the costs of medical treatment should you be injured as a result of participating in this research study. However, we will provide you with a referral to student health or your primary care physician. You do not waive your legal rights by signing this consent form.

**Are there any benefits to society as a result of me taking part in this research?**

Society may gain valuable evidence-based programming for transitioning out of college sports, with an emphasis on pursuing meaningful physical activity.

**Are there any benefits to *me* for taking part in this research study?**

You may gain valuable evidence-based programming for transitioning out of college sports, with an emphasis on pursuing meaningful physical activity.

**Will I get paid for being in the study? Will it cost me anything?**

There are no costs to you or payments made for participating in this study. Participants who complete at least four of the six Pilates sessions, as well as the study questionnaires, will receive a yoga mat.

**How will you keep my information confidential?**

We will do everything possible to make sure that your information is kept confidential. All surveys will be completed with an assigned ID number. Pseudonyms will be used within the focus group transcript. A master list will be kept that links participant names to the assigned ID numbers. This will be stored in a separate locked file cabinet from the data. The master list will be stored electronically in a separate file in UNCG Box. Survey responses, transcripts, and related data will be stored in Box and/or in a locked file cabinet. All information obtained in this study is

strictly confidential unless disclosure is required by law. De-identified data will be stored indefinitely for use in future research.

**What if I want to leave the study?**

You have the right to refuse to participate or to withdraw at any time, without penalty. Choosing not to participate in this study or withdrawing from the study will not affect your student-athlete status. If you do withdraw, it will not affect you in any way. If you choose to withdraw, you may request that any of your data which has been collected be destroyed unless it is in a de-identifiable state. The investigators also have the right to stop your participation at any time. This could be because you have had an unexpected reaction, or have failed to follow instructions, or because the entire study has been stopped.

**What about new information/changes in the study?**

If significant new information relating to the study becomes available which may relate to your willingness to continue to participate, this information will be provided to you.

**Voluntary Consent by Participant:**

By signing this consent form, you are agreeing that you read, or it has been read to you, and you fully understand the contents of this document and are openly willing to consent to take part in this study. All of your questions concerning this study have been answered. By signing this form, you are agreeing that you are 18 years of age or older and are agreeing to participate in this study described to you by Mindy Smith.

Signature: \_\_\_\_\_ Date: \_\_\_\_\_

APPENDIX C

STUDENT-ATHLETE INFORMATION SHEET

Study ID# \_\_\_\_\_

How old are you?

Gender?

How would you describe your race and ethnicity?

What college sport do you play?

What is your academic major?

Do you have an injury or physical condition that limits or prevents you from participating in sport or other physical activity?

No

Yes (Please describe the injury/condition and how it limits activity):

What are your general plans for next year (e.g., career, graduate school, pursue a sport, etc)?

Which statement best describes your physical activity level over the past month?

\_\_\_\_\_ Moderate or vigorous activity at least 5 times/week

\_\_\_\_\_ Moderate or vigorous activity 3-4 times/week

\_\_\_\_\_ Moderate or vigorous activity 2 or less times/week

Which statement best describes your previous experience with Pilates?

\_\_\_\_\_ Little to no experience

\_\_\_\_\_ Moderate experience

\_\_\_\_\_ A lot of experience

APPENDIX D

SESSION EVALUATION FORM

Study ID # \_\_\_\_\_

Session # \_\_\_\_\_

Please check the boxes that most clearly describe your experience in this session.

Statement	Not at all true 1	2	3	Somewhat true 4	5	6	Very true 7
I think I am pretty good at this activity (Pilates).							
I did this activity (Pilates) because I wanted to.							
I felt like I could really trust these people (other SAs in my class).							

\* *Survey statements selected from the Intrinsic Motivation Inventory.*

1. What did you find most helpful about this *PILATES Connect* session?

2. How would you improve this *PILATES Connect* session?

APPENDIX E

PROGRAM EVALUATION FORM

Study ID # \_\_\_\_\_

Please check the boxes that most clearly describe your experience in this program.

Statement	Not at all true 1	2	3	Somewhat true 4	5	6	Very true 7
Because of <i>PILATES Connect</i> , I feel more confident in my ability to transition to meaningful physical activity after the conclusion of college athletics.							
Because of <i>PILATES Connect</i> , I feel like I have greater control over my physical activity choices after the conclusion of college athletics.							
Because of <i>PILATES Connect</i> , I feel more connected to other student-athletes who participated with me.							
I would recommend <i>PILATES Connect</i> to other student-athletes.							
I would consider doing Pilates, or another type of group exercise, again in the future.							

1. What parts of *PILATES Connect* were most helpful?
2. How would you improve *PILATES Connect*?

## APPENDIX F

### FOCUS GROUP QUESTIONS

*What do you expect the transition out of college sports to be like?*

*What do you think will help you transition to meaningful physical activity after college sports?*

*What elements of PILATES Connect enhanced your confidence in a new form of physical activity?*

*What elements of PILATES Connect empowered you to make your own choices?*

*What elements of PILATES Connect facilitated connection with other final-year SAs?*

*What suggestions do you have for improving PILATES Connect?*

*What would you tell other student-athletes about PILATES Connect?*

*How has PILATES Connect influenced your view of the transition out of college athletics?*

*As you look ahead, what types of physical activity might you choose to be involved in after college? Why?*

APPENDIX G  
TRAINING PROGRAM

**Sessions 1-2: Centering and core engagement (Bodyweight)**

Pilates training emphasis

- Move from the center of the body, maintain deep core control
- Adjust exercises to move within capability and comfort
- Mindful experience, focus on the present, increase self-awareness of movement
- Enjoy a lifetime physical activity with peers

Pilates training session (35 minutes)

- **Warm up with dynamic seated stretches (5 minutes)**
  - o Neck, shoulder, arm reaches, core shift and circle, cat/cow
- **Mat work (15 minutes)**
  - o Oppositional stretch and knee drive/extension
  - o Bridge (with leg raise variations)
  - o Rollup (with arms extended to side partway through)
  - o Single leg stretch with opposing arm overhead
  - o Double straight leg stretch (with helicopter reach)
  - o Three way oblique reach
  - o Hula (lift feet)
  - o Side plank switches
  - o Prone heel beats into whale tail
  - o Child's pose pushup
- **Transition with Vinyasa flow (with downward dog, hover plank, cobra)**
  - o 3-5 times
- **Standing work (10 minutes)**
  - o Partial squat position (arm circles, traditional and oblique boxers)
  - o Chair
  - o Knee drive
  - o Lateral lunge balance with arm reach
  - o Star to shooting star
  - o Single leg (forward, lateral, kick out)
- **Cool down with standing balance stretches (5 minutes)**
  - o Tree pose
  - o Three pose moving warrior stretch
  - o Back bend, lateral bend reaches
  - o Saw
  - o Lying spinal twist

## **Sessions 3-4: Control and concentration (2-3 pound medicine balls)**

### **Pilates training emphasis**

- Concentrate on progressing through greater muscle control and core engagement
- Integrate the full body and mind, instead of isolating movements
- Build confidence in your ability to move in a meaningful way
- Enjoy exercise with others, yet determine personal preferences

### **Pilates training session (35 minutes)**

- **Warm up with dynamic seated stretches (5 minutes)**
  - o Neck, shoulder, arm reaches, core shift and circle, cat/cow
- **Mat work (15 minutes)**
  - o Oppositional stretch (with med. balls) and knee drive/extension
  - o Bridge (with leg raise variations)
  - o Teaser
  - o Single straight leg stretch with med. ball weave
  - o Double leg stretch into jackknife
  - o 3 way oblique reach with med. ball
  - o Wolf-pigeon
  - o Side plank switches with twist
  - o Prone heel beats, upper body swimmer
  - o Child's pose pushup (add thread the needle stretch)
- **Transition with Vinyasa flow (with downward dog leg extended, hover plank, cobra)**
  - o 3-5 times
- **Standing work (10 minutes)**
  - o Partial squat position (arm circles, traditional and oblique boxers)
  - o Chair (med. ball reach)
  - o Knee drive with med. ball
  - o Spiderman lunge
  - o Balance reach touch down opposite
  - o Back lunge into warrior 3
- **Cool down with standing balance stretches (5 minutes)**
  - o Tree pose with arm movement
  - o Three pose moving warrior stretch
  - o Forward twist reach
  - o Saw
  - o Lying spinal twist

## **Sessions 5-6: Fluidity, imagination, and intuition (2-6 pound medicine balls)**

### **Pilates training emphasis**

- Continue to choose movement variations that promote individual progression
- Cultivate thankfulness for activity
- Recognize the mental and physical benefits of regular moderate physical activity
- Enjoy self-paced exercise within a supportive group environment

### **Pilates training session (35 minutes)**

- **Warm up with dynamic seated stretches (3-4 minutes)**
  - o Neck, shoulder, arm reaches, core shift and circle, cat/cow
- **Mat work (10 minutes)**
  - o Oppositional stretch (with meds balls) and knee drive/extension
  - o Bridge (with leg raise variations)
  - o Double leg stretch with med. ball
  - o Boomerang
  - o 3 way oblique reach with med. ball
  - o Leg pull down
  - o Side plank switches (reach, twist, leg lift)
  - o Double leg kick
  - o Child's pose pushup (add thread the needle stretch)
- **Transition with Vinyasa flow (with ripple, hover plank, cobra)**
  - o 3-5 times
- **Standing work (10-12 minutes)**
  - o Partial squat position (figure 8, regular and oblique boxers)
  - o Plank to deep chair
  - o Balance curtsy lunge (with med. ball)
  - o Knee drive with med. ball
  - o Warrior twist with bird of paradise balance
  - o Forward lunge with oblique twist
- **Cool down with standing balance stretches (3-4 minutes)**
  - o Tree pose with arm movement
  - o Three pose moving warrior stretch
  - o Forward twist reach
  - o Saw
  - o Lying spinal twist

## APPENDIX H

### REFLECTION AND DISCUSSION QUESTIONS

Student-athletes receive a reflection and discussion guide for use during *PILATES Connect*. Each guide lists discussion questions and provides space for written reflection. The guides are used to stimulate reflection and discussion during the final 15 minutes of each session. At the conclusion of the program, SAs keep their guides.

#### **Reflection and discussion questions: Sessions 1-2 (Emphasis on autonomy)**

##### **Session 1**

What was your experience with Pilates like today?

What personal goals do you have for PILATES Connect?

As you look ahead, what do you believe will be most challenging about the transition out of college sports?

##### **Session 2**

What forms of physical activity could you see yourself enjoying after college sports conclude?

What personal physical activity goals do you have for the future?

What do you believe will motivate you to be active after college sports conclude?

#### **Reflections and discussion questions: Sessions 3-4 (Emphasis on competence)**

##### **Session 3**

In what ways are you growing and progressing in PILATES Connect?

How does being a student-athlete influence your personal confidence?

In addition to being a student-athlete, what are two other areas of your life that give you confidence?

##### **Session 4**

What fears or concerns do you have regarding physical activity beyond college sports?

What excites you most about future physical activity?

What action steps will help you emphasize regular physical activity in your future?

#### **Reflections and discussion questions: Sessions 5-6 (Emphasis on relatedness)**

##### **Session 5**

What do you value most about being part of a college sports team?

What do you believe will be most challenging when you are no longer part of a college sports team?

What has it been like to participate in PILATES Connect with other student-athletes?

##### **Session 6**

How has PILATES Connect influenced your view of future physical activity?

What people or groups could provide physical activity support for you in the future?

What resources or information would be most helpful to you in preparing for meaningful physical activity after college sports?

## APPENDIX I

### FALL 2018 EXECUTIVE SUMMARY

Student-athlete (SA) transitions. Over 480,000 SAs compete in NCAA sports each year, and very few will continue their athletic careers at a competitive level after college. Research suggests that former SAs have reduced physical activity levels in comparison to current SAs and may not be more active or fit than non-SA alumni ( Simon & Docherty, 2017; Sorenson, Romano, Azen, Schroeder, & Salem, 2015). Transition barriers include the loss of team support (Fuller, 2014), less motivation without specific goals (Plateau, Petrie, & Papatomas, 2017), and strong athletic identities without accompanying exercise identities ( Reifsteck, Gill, & Labban, 2016). There is an ongoing need for a physical activity transition curriculum, which can be adapted and implemented at various NCAA institutions.

The *PILATES Connect* program supports final-year student-athletes in the transition to meaningful physical activity after the conclusion of college sports. SAs are encouraged to progress in Pilates training and reflect on the upcoming transition to alumni. *PILATES Connect* uses a new form of activity (Pilates) to help SAs build confidence in different skills, adapt exercises to meet their own needs, and experience community with other SAs. *PILATES Connect* was piloted at [College Name] in January of 2018, with the revised program offered in the fall 2018 semester. The program was implemented to assess feasibility and to evaluate the extent to which SAs felt prepared to transition to lifetime physical activity. Twelve final-year SAs participated in the six-week *PILATES Connect* program during the fall of 2018. The SAs provided session and entire program feedback and participated in a focus group.

*PILATES Connect* feedback (SA attendance, session and program evaluations, focus groups) suggests:

- The program was feasible with high adherence rates.
- SAs recommended the program to other SAs.
- Over the six weeks, SAs significantly increased competence in Pilates.
- SAs enjoyed making choices with movement variations, pacing and medicine balls.
- SAs benefited from time to reflect on and discuss the transition with peers.
- SAs identified specific ways the program supported their transition (e.g., increased personal confidence, recognition of activity options, feeling less alone).
- SAs suggested activities that they might pursue in the future (e.g., cycling, running, yoga, Pilates, barre classes, plyometrics, snowboarding).

Conclusions. The feedback indicates positive responses to the *PILATES Connect* program at [College Name]. SAs adhered well to the program and experienced support in their transition to lifetime physical activity. Participants would strongly recommend the

program to other SAs and would consider doing Pilates or another form of group exercise in the future. Participants had specific suggestions for promoting *PILATES Connect* for greater participation in the future. Effective communication and collaboration with coaches and SA leaders will further enhance sustainability of this transitional program at [College Name]. Through support of SAs in all stages of their careers, we have an opportunity to promote physical and psychological wellness during their time at [College Name] and as alumni.

APPENDIX J  
PROGRAM INFOGRAPHIC

**PILATES Connect Evaluation Report**  
**December 2018**

The **PILATES Connect** program was designed to support student-athletes (SAs) in the transition to meaningful lifetime physical activity.

**PILATES Connect** was implemented in the fall of 2018, with 12 final-year SA participants representing five different sports.

<p><b>AIM 1:</b> Assess feasibility of <b>PILATES Connect</b></p> <p>Overall adherence rate <b>94.4%</b></p> <p>Recommend program to other SAs <b>6.8</b></p> <p>Consider Pilates or other group exercise in the future <b>6.8</b></p> <p>Scale of 1-7 (7=very true)</p>	<p><b>PILATES Connect</b> is rooted in Self-Determination Theory. The program uses a new form of activity to help SAs build confidence in different skills, adapt exercises to meet their own needs and experience community with other SAs.</p>	<p><b>AIM 2:</b> Evaluate SA perceived transition support through <b>PILATES Connect</b></p> <p>More confident in transition to meaningful activity <b>5.5</b></p> <p>Greater control over activity choices after college sports <b>5.9</b></p> <p>More connected to other SA participants <b>6</b></p> <p>Scale of 1-7 (7=very true)</p>
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**Perceived benefits of *PILATES Connect*:**

*"It was like this stepping-stone, it was just the first step to trying new things. It gave me confidence."*

*"[Provided] intentional space and time to think about these aspects of my future physical activity."*

*"Sharing the overall experience with people in similar circumstances. Developing an appreciation for other forms of exercise with others."*

**Future programming recommendations:**  Offer **PILATES Connect** during the fall semester and integrate **Moving On!** during the spring semester