Promoting a Healthy Post-Collegiate Lifestyle:

An Evaluation of the Moving On! Transition Program for Student-Athletes

Erin J. Reifsteck
The University of North Carolina at Greensboro

DeAnne D. Brooks
The University of North Carolina at Greensboro

Jamian D. Newton
The University of North Carolina at Greensboro

Lenka H. Shriver
The University of North Carolina at Greensboro

Funding Acknowledgement: Research for this project was conducted with the support of the NCAA. Any opinions, findings, and conclusions are those of the authors and do not necessarily reflect the views of the National Collegiate Athletic Association.

Additional Acknowledgements: We would like to thank the following current and former students for their assistance with this project: Lauren Bennett, Matthew Lewandowski, Lucas Wilkerson, & Megan Lawless.

Conflict of Interest Disclosure: The University of North Carolina at Greensboro and coauthors Reifsteck, Brooks, and Shriver may financially benefit if the intellectual property related to this research is successful at some point in the future. The potential conflict has been reviewed and approved by UNCG in accordance with its conflict of interest policy.

Abstract

Former student-athletes may face challenges in maintaining physical activity and healthy eating after transitioning out of collegiate athletics. Maladaptive adjustments following athletic transitions can result in detrimental outcomes, ranging from physical health concerns to negative psychosocial consequences. In contrast, positive transitions can promote optimal health and wellbeing. The Moving On! program was developed in recognition of the unique challenges faced by student-athletes and the importance of making healthy transitions out of college sports. The purpose of this study was to evaluate the program's impact on several relevant theoretical

constructs that influence health behaviors, including student-athletes' self-perceptions, self-determined motivation, self-efficacy, and intentions for engaging in physical activity and healthy eating after college. NCAA student-athletes in their final year of competition were recruited from two institutions. Participants (N = 20) completed the Moving On! program along with pre- and post-test surveys and focus group interviews. Survey results revealed positive changes in nutrition-related self-perceptions (t (19) = 2.406; p = 0.026; g = 0.38) and self-efficacy for healthy eating behaviors (t (19) = 3.022; p = 0.007; g = 0.70). No significant changes were observed for exercise identity (p = 0.845), physical activity self-efficacy (p = 0.114), or autonomous motivation for exercise (p = 0.108) and health eating (p = 0.264). Focus group responses indicated that student-athletes' experiences in the program fostered positive shifts in their self-perceptions, enhanced their self-determined motivation, and reinforced their intentions for engaging in physical activity and healthy eating in the future. Implications for future research and program implementation are discussed.

Keywords: student-athlete development, nutrition, and motivation

Introduction

According to a recent survey, only 1% of student-athletes viewed learning how to maintain their fitness and health as a benefit of their participation in intercollegiate athletics (Weight, Navarro, Smith-Ryan, & Huffman, 2016). Student-athletes may face challenges in maintaining a physically active and healthy lifestyle outside of structured college sports. For example, external motivators, including scholarships, playing time, team success, and daily demands from coaches, are quite salient within the context of collegiate athletics. When student-athletes transition out of competitive sport, they may have difficulty finding intrinsic motivators for continuing physical activity (Plateau, Petrie, & Papathomas, 2017). Recent studies suggest that former student-athletes might not be more physically active than non-athlete alumni and report lower health-related quality of life compared to non-athletes, which may in part be due to injuries or chronic pain resulting from their many years of athletic participation (Simon & Docherty, 2014; Sorenson, Romano, Azen, Schroeder, & Salem, 2015). Energy imbalance caused by decreased physical activity without appropriate adjustments to dietary intake following a competitive athletic career can lead to weight gain, which may increase cardiovascular disease risk for some former athletes (Pihl & Jurimae, 2001). In addition to concerns related to long-term physical health, changes in body composition and appearance following the transition out of sport may lead to greater body dissatisfaction, lower self-esteem, and elevated symptoms of depression (Kruger, Lee, Ainsworth, & Macera, 2008; Neumark-Sztainer, Paxton, Hannan, Haines, & Story, 2006). In response to these concerns and the lack of evidence-based transitional programs available to student-athletes that address health-related outcomes, the Moving On! program was developed to help student-athletes make healthy transitions out of college sports by increasing their awareness of potential challenges, helping them develop key strategies, and improving their knowledge about lifetime physical activity and nutrition. In particular, the program targets self-perceptions and self-determined motivation for physical activity and healthy eating to promote a positive transition. The purpose of the current study was to evaluate the program's influence on these targeted theoretical constructs.

Review of the Literature on College Athlete Transitions

Athletic career transitions may impact student-athletes' self-perceptions, especially athletic identity. Athletic identity is defined as the extent to which an individual self-identifies with the role of athlete (Brewer & Cornelius, 2001; Brewer, Van Raalte, & Linder, 1993). Although athletic identity can be related to positive outcomes for athletes, such as improved performance, expanded social relationships, and athletic satisfaction, having a strong athletic identity is also associated with more detrimental outcomes like overtraining, disordered eating, and substance use (Burns, Jasinski, Dunn, & Fletcher, 2012; Heird & Steinfeldt, 2013; Horton & Mack, 2000). Transitioning out of a competitive sport career can be particularly challenging for student-athletes who have developed a very salient athletic identity (Lally, 2007). Understandably, departing from the well-defined role of an athlete can be emotionally challenging considering that student-athletes have devoted years of physical, mental, and emotional commitment to their sport.

In concert with the transition concerns related to departing from a well-established athletic identity (Gordon & Lavallee, 2012; Taylor & Ogilvie, 1994), student-athletes also face

broader transition challenges related to their departure from the college environment. For many individuals, college is a time of personal, relational, and professional growth, ranging from developing competence and establishing identity to forming purpose and direction for the future (Chickering & Reisser, 1993). Thus, the transition out of college can elicit high levels of stress when students face both real and perceived pressure to take on the next steps in life as they adjust to changes in lifestyle, social networks, responsibilities, and roles (Lane, 2013; Yazedjian, Kielaszek, & Toews, 2010).

For student-athletes specifically, transitioning from the competitive collegiate sport environment can result in added stress that may coincide with identity changes and shifts in motivation for maintaining healthy lifestyles (Plateau et.al., 2017). To best prepare for the challenges of transitioning out of college sports, proactive coping strategies prior to the transition are recommended over reactive coping after the transition has occurred (Lally, 2007; Park, Lavallee, & Tod, 2013). However, proactive transition programs that specifically promote lifetime physical activity and healthy nutrition among transitioning student-athletes are rare, despite the potentially unique physical health-related and psychosocial concerns for student-athletes. The Moving On! program presented in this paper was developed to help fill this gap in transitional programming for student-athletes. In the next section, we describe the program and review its theoretical underpinnings.

Conceptual Framework for the Moving On! Program

Effective prevention programs target theory-informed mediators that in turn impact health behaviors (MacKinnon, 1994). As such, the Moving On! program was designed to address self-perceptions and motivation, which have been shown to foster continued physical activity and healthy eating (Strachan & Brawley, 2009; Teixeira, Carraça, Markland, Silva, & Ryan, 2012). Specifically, the program emphasizes the roles of self-identity and self-determined motivation in making healthy sport transitions (Reifsteck & Brooks, 2018; Reifsteck, Gill, & Labban, 2016). According to identity and self-determination theories, individuals are more likely to maintain physical activity and healthy eating when these behaviors are integrated into their identity and when motivated by self-determined reasons (e.g., enjoy physical activity, value nutrition) (Burke, Owens, Serpe, & Thoits, 2003; Gillison, Standage, & Skevington, 2006; Mata et al., 2009; Ryan, Williams, Patrick, & Deci, 2009; Strachan, Fortier, Perras, & Lugg, 2012). Based on this underlying framework, the four-session Moving On! program assists student-athletes with planning for a healthy lifestyle after college through strategies designed to help them develop positive health-related self-perceptions beyond college sports and enhance their self-determined motivation for lifetime physical activity and healthy eating.

The first session of the Moving On! program introduces student-athletes to the potential challenges they may face during the transition out of college athletics and provides an overview of health-related physical activity and nutrition benefits and recommendations. Session two encourages student-athletes to explore their current self-perceptions, how their identity is likely to be impacted by the transition out of college sports, and the role that physical activity and healthy eating behaviors play in student-athletes' views of themselves for the future. Specific reflection activities in the program workbook help guide these discussions (e.g., Who am I now? Who do I want to be in the future?). Session three educates student-athletes about effective goal-

setting and emphasizes strategies they can use for overcoming barriers to reaching their physical activity and healthy eating goals. For example, participants practice setting specific, measurable, action-oriented, realistic, time-based (SMART) goals and develop action plans for achieving those goals. Session four reviews and synthesizes content from previous sessions to help student-athletes plan for integrating physical activity and healthy eating in their future lives. Each session includes self-reflection activities with opportunities to engage in group discussion, participate in lifetime physical activities like yoga, and take part in nutritional demonstrations where they learn skills such as how to assemble a healthy meal.

To examine student-athletes' self-perceptions and self-determined motivation, the evaluation project described in this study focused on the Moving On! program's impact on the key constructs of exercise identity, healthy eater identity, autonomous motivation, self-efficacy, and future intentions related to physical activity and healthy eating.

Identity

As outlined in identity theory, individuals engage in behaviors that reinforce their identities, forming a reciprocal relationship between identity and behavior (Burke & Reitzes, 1981). The constructs of exercise identity and healthy eater identity reflect the extent that individuals identify with and derive meaning from their exercise and healthy eating behaviors, respectively (Anderson & Cychosz, 1994; Strachan & Brawley, 2009). Consistent with identity theory, higher exercise and healthy eater identities predict future exercise and eating behaviors (Cardinal & Cardinal, 1997; Strachan & Brawley, 2009). Thus, as student-athletes begin to disengage from their athletic identity during their transition out of college, fostering a broader exercise identity beyond one's chosen sport (e.g., "active person" vs. "softball player") and cultivating a healthy eater identity should theoretically enhance student-athletes' participation in physical activity and healthy eating beyond college sports.

Motivation

Further, self-determination theory (Ryan & Deci, 2000) distinguishes among various types of motivation for adoption and maintenance of health behaviors (Ryan et al., 2009). According to self-determination theory, individuals are more likely to maintain behaviors that are motivated by autonomous regulations (e.g., based on one's interests and values) as opposed to more controlled regulations (e.g., rewards, punishments). Greater self-determined motivation is positively associated with continued physical activity participation (Daley & Duda, 2006; Teixeira et al., 2012). Self-determination theory posits that fulfillment of basic psychological needs, including competence, autonomy, and relatedness, can support intrinsic motives for physical activity that in turn predict greater participation (Barbeau, Sweet, & Fortier, 2009). The Moving On! program is designed to foster these needs in several ways. For example, participants are exposed to guided nutrition demonstrations (e.g., preparing a healthy snack) and alternative physical activity options (e.g., kickboxing) to help them build new and relevant skills. Student-athletes are also encouraged to identify personally meaningful goals for physical activity participation and dietary changes that meet their own needs and preferences. The Moving On! program uses a group-based discussion format to promote relatedness by creating a space where

student-athletes can share their experiences with other students who are facing a similarly challenging transition.

Self-efficacy and Intentions

Another construct relevant to motivation – self-efficacy – is a key predictor of exercise and nutrition-related behaviors (Marcus, Eaton, Rossi, & Harlow, 1994; Marcus & Forsyth, 2009; Strachan & Brawley, 2009). A transition program that fosters enhanced self-determined motivation and builds self-efficacy for engaging in health-related behaviors beyond competitive sport should bolster intentions to be physically active and eat healthfully after college. Moving On! program content is intentionally designed to foster greater self-efficacy and promote future intentions to engage in a healthy lifestyle after college. Specifically, the program includes educational information about physical activity benefits, nutrition recommendations, and goal-setting, as well as interactive experiences with physical activity and healthy eating strategies.

Purpose of the Study

The development and evaluation of the Moving On! program has been an ongoing project, with prototype development and a feasibility study conducted in 2015. Preliminary findings were overwhelmingly positive, reflecting a high demand for and perceived value of the Moving On! program (Reifsteck & Brooks, 2018). In phase 2 of this initiative, which began in 2016, we completed the development of additional program content related to nutrition and evaluated initial outcomes. The purpose of the current study was to evaluate the program's potential influence on the targeted theoretical constructs of self-perceptions and self-determined motivation for maintaining physical activity and eating healthfully. The findings from this study may inform future directions for developing programs that promote healthy transitions and lifestyle changes among college athletes.

Methods

Participants

NCAA student-athletes in their final year of their college athletic career were recruited to participate in the Moving On! program at two institutions (one in Division I [DI] & one in Division III [DIII]) in the southeastern United States during the spring semester. Twenty-two total participants attended the first session of the program. Two participants were unable to attend the remaining program sessions, resulting in a final sample of 20 student-athletes (DI university: n = 12; DIII college: n = 8) for the pre- and post-test data analyses. Participants identified predominantly as female (n = 17) and African-American (n = 9) or White (n = 9). The student-athlete participants represented a variety of sports including basketball, soccer, softball, tennis, cross country, track & field, and golf.

Measures

Measures of several theory-informed mediators and relevant factors related to the promotion of physical activity and healthy eating behaviors were assessed, including exercise

identity, healthy eater identity, self-determined motivation, self-efficacy, and future intentions for physical activity and healthy eating.

Exercise identity. Exercise identity was assessed using the Exercise Identity Scale (EIS; Anderson & Cychosz, 1994). The EIS includes nine items specific to self-perceptions related to exercise (e.g., *I consider myself an exerciser*). Each of the nine questions are rated on a 7-point Likert scale (strongly disagree to strongly agree). Previous research has demonstrated the EIS to be a valid and reliable measure (Anderson & Cychosz, 1994; Anderson, Cychosz, & Franke, 2001).

Healthy eater identity. Identity perceptions related to healthy eating were measured with the Healthy Eater Identity Scale (HEIS; Strachan & Brawley, 2009). A modification of the EIS, this scale was created to assess self-perceptions related to healthy eating (Strachan & Brawley, 2009). Similar to the EIS, the HEIS includes nine items that assess strength of identification as a healthy eater (e.g., *I consider myself to be a healthy-eater*). The measure is rated on a 7-point Likert scale (strongly disagree to strongly agree) and has been shown to have high reliability (Strachan & Brawley, 2009).

Self-determined motivation. Self-determined motivation for physical activity and healthy eating were assessed using the autonomous subscales of the Treatment Self-Regulation Questionnaire for Exercise and Diet, respectively (TSRQ; Levesque et al., 2007). Each of the autonomous subscales of the TSRQ includes six items related to self-determined reasons for engaging in or modifying a health behavior (e.g., *The reason I would exercise regularly is because I personally believe it is the best thing for my health; The reason I would eat a healthy diet is because I feel that I want to take responsibility for my own health*). Items are rated on a 7-point Likert scale ranging from "not at all true" to "very true." The TSRQ has previously been shown to be a valid and reliable assessment tool (Levesque et al., 2007).

Self-efficacy. Self-efficacy for exercise was assessed with a widely used five-item measure of confidence to persist in exercise in various situations (e.g., *How confident are you that you could be physically active when you are tired*) (Marcus, Selby, Niaura, & Rossi, 1992; Marcus & Forsyth, 2009). The items were rated on a 5-point scale ranging from "not confident at all" to "extremely confident." Self-efficacy for engaging in healthy eating behaviors like diet planning/monitoring and preparing a healthy snack/meal was assessed using modified items from previous research (e.g., *How confident are you that you can eat a healthy diet*; Campbell, et al., 1994). The items for self-efficacy for healthy eating were also rated on a 5-point scale with higher scores reflecting greater self-efficacy. The reported self-efficacy scores for both physical activity and healthy eating were calculated by averaging the five items in each scale.

Future intentions. Intentions for engaging in both physical activity and healthy eating were assessed using two items: *I intend to exercise regularly after college* and *I intend to eat healthy after college*. These were rated on a 7-point scale with higher scores indicating greater intentions to engage in exercise and eat healthfully.

Procedures

The university's Institutional Review Board approved study procedures, and all student-athlete participants provided informed consent to participate in the study. Gift card incentives were used to promote attendance at program sessions and continued participation in data collection throughout the study. Before beginning the program, participants completed pre-test surveys assessing identity, self-determined motivation, self-efficacy, and intentions related to physical activity and healthy eating. Then, participants engaged in the four 90-minute Moving On! program sessions. Program adherence was high, with 100% of participants attending at least three sessions. The majority of participants (n = 15) attended all four sessions. Participants completed the same survey measures again immediately upon completion of the program (post-test). Three focus groups (n = 7; n = 6; n = 4) were conducted in a private room on each campus within one week of completing the program to provide an opportunity for participants to elaborate on their experience overall as well as with specific program components (see Appendix A for interview guide).

Data Analysis

Data were downloaded from Qualtrics with cleaning, subscale calculations, and analyses conducted in SPSS version 23 for Windows. The theoretical constructs of identity, self-determined motivation, self-efficacy, and future intentions related to physical activity and healthy eating were evaluated by pre- and post-test survey measures. Changes from pre- to post-test were analyzed using paired sample t-tests. Interpretations of differences emphasized effect size in addition to statistical significance given the small size of the sample. Hedges' g, which is a more conservative estimate of effect size that corrects for potential bias in small samples, was calculated using equations provided by Lakens (2013). As part of a larger formative evaluation approach (Patton, 2002), focus group questions were constructed to offer participants the opportunity to provide more in-depth descriptions (Morgan, 1997) of their experience in the program. The focus groups were recorded, transcribed verbatim, and coded for themes relating to self-perceptions and motivation for physical activity and healthy eating.

Results

The current project evaluated the impact that participation in the Moving On! program has on student-athletes' self-perceptions and self-determined motivation for physical activity and healthy eating behaviors. This study also assessed whether the program's educational content and strategies enhanced participants' intentions and self-efficacy for physical activity and healthy eating. Given sample limitations, all participants were combined into one group for analyses of program effects. Survey results and focus group findings are presented below.

Survey Results

Survey results suggested moderate and significant changes in healthy eater identity scores among student-athletes, t (19) = 2.406; p = 0.026; g = 0.38. There were no significant changes in student-athletes' exercise identity ratings from pre-test to post-test, t (19) = 0.198; p = 0.845; g = 0.06.

Observed changes in self-determined/autonomous motivation for exercise were small and did not reach significance, t (19) = 1.686; p = 0.108; g = 0.23. Similarly, autonomous motivation for eating a healthy diet was not found to be significantly different at post-test compared to pre-test, t (19) = 1.152; p = 0.264, g = 0.24.

Self-efficacy for physical activity increased by a small but not significant amount, t (19) = 1.657; p = 0.114; g = 0.27. Nutrition self-efficacy increased by a large and statistically significant amount, t (19) = 3.022; p = 0.007; g = 0.70.

While future intentions for physical activity and healthy eating were already high at pre-test, changes in the direction of greater intentions for physical activity at post-test approached significance, t (19) = 1.710; p = 0.104; g = 0.37. The small increase in future intentions related to healthy eating was not statistically significant, t (19) = 0.900; p = 0.379; g = 0.19.

Average item endorsements for each of the measured constructs at pre-test and post-test are shown in Table 1 along with effect sizes for observed changes from pre- to post-test.

Table 1

Descriptive Statistics for Self-Perceptions, Self-Determined Motivation, Self-Efficacy, and Future Intentions

	Descriptives	**Pre-Test**	**Post-Test**	**Effect Size**
Self-Perceptions				
Healthy Eater Identity	*Mean*	4.622	5.022	.38
(Scale of 1-7)	*SD*	1.076	0.960	
Exercise Identity	*Mean*	5.606	5.683	.06
(Scale of 1-7)	*SD*	1.031	1.428	
Self-Determined Motivation				
Exercise	*Mean*	6.275	6.458	.23
(Scale of 1-7)	*SD*	0.797	0.749	
Diet	*Mean*	6.050	6.258	.24
(Scale of 1-7)	*SD*	0.966	0.716	
Self-Efficacy				
Physical Activity	*Mean*	3.010	3.250	.27
(Scale of 1-5)	*SD*	0.926	0.789	
Nutrition	*Mean*	3.608	4.125	.70

(Scale of 1-5)	*SD*	0.672	0.741	
Future Intentions				
Physical Activity	*Mean*	6.600	6.800	.37
(Scale of 1-7)	*SD*	0.598	0.410	
Nutrition	*Mean*	6.250	6.400	.19
(Scale of 1-7)	*SD*	0.716	0.821	

Note: To enhance interpretation, mean scores reflect average item endorsement rather than total scores.

Focus Group Findings

Self-perceptions. Data gleaned from the focus groups revealed that, during the program, participants recognized an overall shift in their self-perceptions. As a female participant on the cross country/track team observed, "[The Moving On! program] was like a space where we could all share how we really felt about not being student-athletes anymore." During the program, participants also started to envision themselves outside of a narrow athlete identity and began to focus on engaging in exercise and healthy eating beyond the athlete-centered, sport-specific training context. For example, another female track and field student-athlete stated:

> I think I'll be ok with [physical activity] not being as strenuous as it is right now, 'cause, I mean, I was gonna like, I was probably gonna still find time to go out on a track and try to do what I'm doing now. But through this program I feel like it'll be ok…like I don't have to hit the times I'm hitting right now. It'll be ok to just run for fun and not have to worry about the pressure… and not pressure myself to what I'm doing now.

This comment represents the sentiments of participants who looked forward to disengaging from the athlete role and participating in more moderate physical activity. The following statement by a female cross country/track and field student-athlete reflects how this transition can be challenging:

> And for me it's going to be difficult not to want to go do some mile sprints instead, just going for a good run and not doing the power lifts…It's just gonna be, need to maintain and stay healthy and active.

While this participant was feeling compelled to continue maintaining the high-intensity training typical for collegiate athletes, she was learning the value of moderate-intensity physical activity for maintenance of optimal health. Further explaining how these behaviors may change when transitioning from their identity as athletes to "normal people," a female softball player reflected, "We need to learn to like eat more like what normal people do. Like, we don't need to carb and protein load as much [now that we're no longer athletes]." Responses from the focus groups suggest that Moving On! offered a forum for student-athletes to consider who they will be after college sports, and how healthy eating and physical activity will accompany this change in

identity.

Self-determined motivation. Responses from the focus groups suggested that the Moving On! program, and the goal-setting activities in particular, positively impacted participants' motivation to engage in health-related physical activity and healthy eating. Student-athletes described how their motivation to be healthy was related to their future goals. Comments from a female softball player represented this perspective:

> I'm definitely gonna have [physical activity] at the top [of my priorities], just because some of the things in my life that are important is like, being able to like to grow old with my family, so I don't want to get diseases and things like that. So, I think now that we're done, I'm like … now I need to [be active] because I don't have softball there that has been keeping me healthy. So, I need to figure out how to do it with something else.

Other Moving On! participants also recognized that their physical activity had largely been restricted to sports-related training until now. Understanding that her current fitness levels were a result of training for sports, a female soccer player expressed her goal of engaging in healthy behaviors in the future to maintain her ideal personal body aesthetic: "It's not something I want to do is put on a lot of weight. It'll keep my confidence level up and everything like that if I was to maintain a healthy diet and also physical activity."

Athletes' health-related behaviors are often motivated by external pressures to perform well, impress coaches, and/or earn scholarships or rewards. However, theory underlying the Moving On! program suggests that student-athletes are more likely to engage in healthy behaviors over the long-term if they are motivated by self-determined reasons. The following quote by a male basketball player demonstrates that some participants were aware of the intrinsically motivating factors that may drive their physical activity and healthy eating in the future: "I feel like [physical activity would] be a high priority in my life just 'cause it makes me feel good." Focus group responses also suggested that the Moving On! program helped student-athletes shift from externally-defined sources of motivation for physical activity and healthy eating to more self-determined forms, such as for enjoyment. For example, one softball player expressed looking forward to the enjoyment of having newfound autonomy and choice over how she will be active:

> I also think I'm going to enjoy [physical activity] more [after college]. Cause it's not gonna be forced, and to do certain things that I don't want to do, it's like what I want to do that day. Like, what do I feel like– walking? Do I feel like running?

Additional comments from focus group participants suggested that specific program elements, especially the informational sessions and demonstrations, were instrumental in helping student-athletes realize how physical activity and healthy eating can be positive and enjoyable. For example, a female softball player contrasted her experience in the Moving On! program with the previous nutrition advice she had received from a nutritionist who worked with her team: "Normally when we talk about healthy food, [other nutritionists] just say like... eat kale, eat quinoa. That sounds disgusting. But you guys brought food that was healthy but... to be healthy you don't have to eat disgusting food." Through the program, participants learned that healthy

food can taste good and physical activity can be fun. A softball participant explained how this realization was one of her most important takeaways from the program: "And we were like, 'Oh! That's cool! I can enjoy myself while I do this?' That was a big one for me." Other student-athlete participants had similar sentiments and cited the role of the Moving On! program in helping them shift toward thinking of physical activity and healthy eating as activities that are valued for self-determined reasons.

Self-efficacy. During focus groups, some student-athletes acknowledged concerns with fitting physical activity and healthy eating into a post-competitive lifestyle, and suggested that the program helped build their confidence in being able to maintain a healthy lifestyle after college. A female track and field student-athlete explained how Moving On! helped her gain confidence in meeting her exercise and nutrition goals:

> The two excuses I had, pretty much, in my head for why I wouldn't be active or why I wouldn't eat healthy [were] being on the go, and then not making time. You guys basically explained ways to get around that. I mean, making time for working out, I mean, it can only be… 20 to 30 minutes is not that much throughout the day. And as far as the eating part, I can just make [a snack/meal] the night before or whenever I had time so that helped me out a lot.

This participant, who was still competing in her final season of track and field, acknowledged that the program helped her feel better about the upcoming transition: "This program made me more hopeful for the transition…the stuff we talked about makes me feel like it's not going to be too bad, actually." A softball participant echoed this sentiment by stating, "I actually feel really confident now. I wouldn't have, but I do now because of [Moving On! program]." These data align with other quotes made by participants throughout the focus groups. The student-athletes had been able to function and thrive within the collegiate training environment but, prior to participating in the Moving On! program, they were not as confident that they had the knowledge and skills needed to transition into lifestyles involving health-related physical activity and healthy eating. Goal-setting activities paired with educational content and demonstrations during the program helped them gain a sense of control and increased self-efficacy for the transition. They left the program feeling more confident and prepared to meet health-related recommendations for physical activity and healthy eating.

Future intentions. Focus group responses suggest that student-athletes intended to lead healthy lifestyles after completing the program and transitioning into post-collegiate life. For instance, a softball player commented on plans that she and a teammate had for continuing a healthy lifestyle after the program: "Like me and [another participant] are living together next year and we've already been talking about [how] we're gonna be healthy." Several participants commented on the impact and salience of the nutrition-related content and demonstrations in the Moving On! program. For example, a female soccer player said:

> I'm definitely thinking about it more as we've done this program. It's definitely in the back of my mind, like "Oh should I be eating this?" or "Is this too much on my plate?" or "Can I save some for later?"

These comments by participants suggest that the information and experiences during the Moving On! program influenced how and why they will engage in physical activity and healthy eating beyond their days as collegiate athletes.

In all, these focus group data complement the survey data by using participants' own words to further examine the Moving On! program's impact on specific constructs. Their words indicate the program had a positive impact on self-perceptions, self-determined motivation, and self-efficacy, and reinforced intentions to engage in health-related physical activity and healthy eating in the future.

Discussion

The purpose of the current project was to evaluate the Moving On! program's influence on the targeted theoretical constructs of student-athletes' self-perceptions and self-determined motivation for maintaining physical activity and eating healthfully after college. Further, changes in participants' intentions and self-efficacy for physical activity and healthy eating were assessed after receiving educational content and strategies provided in the Moving On! program. It was expected that participation in the Moving On! program would result in adaptive changes in self-perceptions and improve autonomous motivation related to physical activity and healthy eating. As mediators of behavior change, positive shifts in self-perceptions and self-determined motivation are likely to promote engagement in physical activity and healthy eating (Cardinal & Cardinal, 1997; Strachan & Brawley, 2009; Teixeira et al., 2012). Based on the program content, which included setting realistic goals and developing detailed action plans, it was also expected that participating in the program would foster greater self-efficacy (i.e., belief in ability to be physically active/eat healthfully) and promote future intentions to engage in a healthy lifestyle after college.

A primary goal of the Moving On! program is to help student-athletes integrate physical activity/exercise and healthy eating behaviors into their self-identities. Survey results indicated that participants experienced higher levels of identification as a healthy eater after engaging in the Moving On! program. In response to feedback from an earlier pilot, one major revision to the expanded program was to incorporate a nutritional component to educate student-athletes on healthy eating habits (Reifsteck & Brooks, 2018). The enhanced healthy eater identity scores observed in the current sample support the potential benefits of incorporating nutritional education in student-athlete transition programs. While healthy eater identities were shown to significantly increase, there was little change in participants' exercise identity upon completion of the program based on the survey measures. Developing a salient exercise identity that is broader than an athlete-focused identity may be a long-term process that extends beyond the timeframe measured in this study. However, responses from the focus groups suggest that the student-athlete participants recognized how their self-perceptions were beginning to shift during the Moving On! program. These findings support the potential for the Moving On! program to promote positive shifts in self-perceptions that may predict future engagement in exercise and healthy eating (Cardinal & Cardinal, 1997; Strachan & Brawley, 2009).

Further, the Moving On! program seeks to promote enhanced motivation for physical activity and healthy eating that is based on more self-determined, or autonomous, reasons (e.g.,

enjoyable, consistent with values and goals). Autonomous motivation for both exercise and dietary behaviors increased by only a small amount from pre-test to post-test, and these changes were not statistically significant. However, scores were quite high to begin with, thus creating a possible ceiling effect that left little room for improvement based on the measurement scale used in this study.

Responses from the focus groups suggested that the Moving On! program positively impacted motivation to engage in health-related physical activity and healthy eating. According to self-determination theory, individuals are more likely to engage in behaviors that are intrinsically motivating (Ryan & Deci, 2000). While autonomous motivation for participating in physical activity and eating healthfully was high before completing the program, student-athletes were able to articulate during the focus group interview ways that the program strengthened self-determined motivation for leading healthy lifestyles.

With regards to self-efficacy for physical activity, there were minimal changes observed at the completion of the program based on survey responses. However, student-athletes reported a statistically significant increase in levels of self-efficacy for engaging in healthy eating behaviors, which may promote sustained changes in healthy eating (Strachan & Brawley, 2009). The student-athletes had been previously successful with training and eating for sport performance, but some acknowledged a lack of self-efficacy for fitting physical activity and healthy eating into a post-competitive lifestyle. Focus group responses suggested that the knowledge and experiences gained from the program appeared to help build their self-efficacy in these areas. Participants rated their future intentions for physical activity and healthy eating high at pre-test; however, moderate increases in future intentions to be physically active after college did approach significance. While students had already expressed high aims to be physically active and eat healthfully, focus group responses indicated that involvement in the program bolstered these intentions.

Overall, findings were promising and suggest that the Moving On! program may be a potentially effective program for promoting lifestyle physical activity and healthy eating in transitioning student-athletes. The transition out of college presents several challenges, but the Moving On! program supports the holistic development of student-athletes as they transition from the athletic role. More specifically, the program helps students-athletes work toward broadening their identities as athletes and considering life after their collegiate careers. Participants are also encouraged to set short-term and long-term goals in the program that they can work toward during and after completion of the program. Facilitating such identity shifts and development of purpose are essential for promoting student growth (Chickering & Reisser, 1993).

The findings from the current study add to the limited body of research on effective health-promoting transition programs for student-athletes that translate existing theory and research into practical strategies. The results from this preliminary evaluation may help inform other interventions targeting healthy transitions and lifestyle changes. Specifically, findings are consistent with literature promoting proactive coping (Lally, 2007; Park et al., 2013) for transitioning out of sports and support the importance of targeting theory-informed mediators of behavior change to foster positive transitions for student-athletes.

Limitations

There are several limitations to this study that future research should address, including the small sample size and short-term assessment. While there were some promising trends in the survey data, a fully-powered study with a larger sample size, a comparison group, and, ideally, more sensitive survey instruments or other objective measures may be necessary to gather a clearer quantified assessment of the program's potential influence on relevant theoretical constructs. Subsequent studies should evaluate this program and other transition programs in varied settings and contexts with more diverse samples (e.g., gender, sport, and type of institution) to examine potential differences in program effectiveness. Along these lines, future research might also consider how the effectiveness of transitional programs vary for student-athletes who have a strong athletic identity in comparison to those with less salient athletic identities. Additionally, future research is warranted to assess the long-term impact of transition programs like Moving On! by examining their sustained impact on mediators of behavior change as well as changes in actual physical activity and healthy eating behaviors. While attitudes toward physical activity have been found to be predictive of physical activity participation, positive intentions do not necessarily translate to actual behaviors (Pooblan, Aucott, Clarke, & Smith, 2012). Therefore, assessments of the potential long-term impact on behavior are needed. Finally, given the four-session program structure examined in this study, future research might explore the ideal intervention length necessary to make a substantial impact on relevant behavior change constructs in the context of sport transitions.

Implications for NCAA Institutions

To help support institutions in adopting health-focused transition programming for their student-athletes, we developed a facilitator guide and student-athlete workbook for the Moving On! program. The guide provides step-by-step instructions for delivering the program, with suggestions for how institutions can adapt program content and structure to meet their needs. The workbook contains reflection activities used in the program along with educational content about health-related physical activity and nutrition. Given constrained resources and competing priorities that athletics departments face in their efforts to promote student-athlete development opportunities, these manuals were designed so that the program could be delivered by a variety of existing athletics department staff members without requiring exercise or nutrition experts to serve as program facilitators. We also developed a website (https://AthletesMovingOn.org) to provide current and former student-athletes with freely accessible online resources, including physical activity and nutrition guidelines, tips, and videos related to making a healthy transition out of college athletics.

Conclusion

The findings from this study indicate that a health-focused transition program for student-athletes can positively impact student-athlete self-perceptions, motivation, self-efficacy, and future intentions for engaging in a physically active and healthy lifestyle after sport. Given the physical and psychosocial concerns associated with unhealthy transitions, it is important to target key constructs that can promote positive, healthy transitions out of competitive sports. The

Moving On! program shows promise for helping student-athletes transition to physically active and healthy lifestyles and may serve as a model for informing the development of other transition programs.

References

Anderson, D. F., & Cychosz, C. M. (1994). Development of an exercise identity scale. *Perceptual and Motor Skills*, *78*(3), 747-751.

Anderson, D. F., Cychosz, C. M., & Franke, W. D. (2001). Preliminary exercise identity scale (EIS) norms for three adult samples. *Journal of Sport Behavior*, *24*(1), 1-9.

Barbeau, A., Sweet, S. N., & Fortier, M. (2009). A path-analytic model of self-determination theory in a physical activity context. *Journal of Applied Biobehavioral Research, 14*(3), 103-118.

Brewer, B. W., & Cornelius, A. E. (2001). Norms and factorial invariance of the Athletic Identity Measurement Scale. *Academic Athletic Journal*, *15*(2), 103-113.

Brewer, B. W., Van Raalte, J. L., & Linder, D. E. (1993). Athletic identity: Hercules' muscles or Achilles heel? *International Journal of Sport Psychology, 4*(2), 237-254.

Burke, P.J., Owens, T.J., Serpe, R.T., & Thoits, P.A. (Eds.) (2003). *Advances in identity theory and research.* New York, NY: Kluwer Academic/Plenum Publishers.

Burke, P. T., & Reitzes, D. (1981). The link between identity and role performance. *Social Psychology Quarterly, 44*, 83–92.

Burns, G. N., Jasinski, D., Dunn, S. C., & Fletcher, D. (2012). Athlete identity and athlete satisfaction: The nonconformity of exclusivity. *Personality and Individual Differences, 52*(3), 280-284.

Campbell, M. K., DeVellis, B. M., Strecher, V. J., Ammerman, A. S., DeVellis, R. F., & Sandler, R. S. (1994). Improving dietary behavior: The effectiveness of tailored messages in primary care settings. *American Journal of Public Health, 84*(5), 783-787.

Cardinal, B. J., & Cardinal, M. K. (1997). Changes in exercise behavior and exercise identity

associated with a 14-week aerobic exercise class. *Journal of Sport Behavior, 20*(4), 377-386.

Chickering, A. W., & Reisser, L. (1993). *Education and identity*. San Francisco, CA: Jossey-Bass.

Daley, A. J., & Duda, J. L. (2006). Self-determination, stage of readiness to change for exercise, and frequency of physical activity in young people. *European Journal of Sport Science*, *6*(4), 231-243.

Gillison, F. B., Standage, M., & Skevington, S. M. (2006). Relationships among adolescents' weight perceptions, exercise goals, exercise motivation, quality of life and leisure-time exercise behaviour: A self-determination theory approach. *Health Education Research*, *21*(6), 836-847.

Gordon, S., & Lavallee, D. (2012). Career transitions. In T. Morris & P. Terry (Eds.), *The new sport and exercise psychology companion* (pp. 567-582). Morgantown, WV: Fitness Information Technology.

Heird, E. B., & Steinfeldt, J. A. (2013). An interpersonal psychotherapy approach to counseling student athletes: Clinical implications of athletic identity. *Journal of College Counseling, 16*(2), 143-157.

Horton, R., & Mack, D. (2000). Athletic identity in marathon runners: Functional focus or dysfunctional commitment? *Journal of Sport Behavior*, *23*(2), 101-119.

Kruger, J., Lee, C. D., Ainsworth, B. E., & Macera, C. A. (2008). Body size satisfaction and physical activity levels among men and women. *Obesity*, *16*(8), 1976-1979.

Lakens, D. (2013). Calculating and reporting effect sizes to facilitate cumulative science: A practical primer for t-tests and ANOVAs. *Frontiers in Psychology, 4*, 1-12.

https://doi.org/10.3389/fpsyg.2013.00863

Lally, P. (2007). Identity and athletic retirement: A prospective study. *Psychology of Sport and Exercise, 8*(1), 85-99.

Lane, J. A. (2013). Group counseling for students transitioning out of postsecondary education. *Groupwork*, *23*(1), 34-55.

Levesque, C. S., Williams, G. C., Elliot, D., Pickering, M. A., Bodenhamer, B., & Finley, P. J. (2007). Validating the theoretical structure of the Treatment Self-Regulation Questionnaire (TSRQ) across three different health behaviors. *Health Education Research*, *22*(5), 691-702.

MacKinnon, D. P. (1994). Analysis of mediating variables in prevention and intervention research. In A. Cazares & L. A. Beatty (Eds.), *Scientific methods for prevention intervention research* (pp. 127-153). Rockville, MD: National Institute on Drug Abuse.

Marcus, B. H., Eaton, C. A., Rossi, J. S., & Harlow, L. L. (1994). Self-efficacy, decision-making, and stages of change: An integrative model of physical exercise. *Journal of Applied Social Psychology*, *24*(6), 489-508.

Marcus, B. H., & Forsyth, L. H. (2009) *Motivating people to be physically active* (2nd ed.). Champaign, IL: Human Kinetics.

Marcus, B. H., Selby, V. C., Niaura, R. S., & Rossi, J. S. (1992). Self-efficacy and the stages of exercise behavior change. *Research Quarterly for Exercise and Sport, 63,* 60-66.

Mata, J., Silva, M. N., Vieira, P. N., Carraça, E. V., Andrade, A. M., Coutinho, S. R., . . . & Teixeira, P. J. (2009). Motivational "spill-over" during weight control: Increased self-determination and exercise intrinsic motivation predict eating self-regulation. *Health Psychology*, *28*(6), 709-716.

Morgan, D. L. (1997). *Focus groups as qualitative research* (2nd ed.). Thousand Oaks, CA: Sage Publications.

Neumark-Sztainer, D., Paxton, S. J., Hannan, P. J., Haines, J., & Story, M. (2006). Does body satisfaction matter? Five-year longitudinal associations between body satisfaction and health behaviors in adolescent females and males. *Journal of Adolescent Health*, *39*(2), 244-251.

Park, S., Lavallee, D., & Tod, D. (2013). Athletes' career transition out of sport: A systematic review. *International Review of Sport and Exercise Psychology*, *6*(1), 22-53.

Patton, M. Q. (2002). *Qualitative research and evaluation methods,* (3rd ed.). Thousand Oaks, CA: Sage Publications.

Pihl, E., & Jürimäe, T. (2001). Relationships between body weight change and cardiovascular disease risk factors in male former athletes. *International Journal of Obesity*, *25*(7), 1057-1062.

Plateau, C. R., Petrie, T. A., & Papathomas, A. (2017). Exercise attitudes and behaviours among retired female collegiate athletes. *Psychology of Sport and Exercise, 29,* 111-115.

Poobalan, A. S., Aucott, L. S., Clarke, A., & Smith, W. C. S. (2012). Physical activity attitudes, intentions and behaviour among 18–25 year olds: A mixed method study. *BMC Public Health*, *12*, 1-10. http://doi.org/10.1186/1471-2458-12-640

Reifsteck, E. J. & Brooks, D. D. (2018). A transition program to help student-athletes move on to lifetime physical activity. *Journal of Sport Psychology in Action, 9*(1), 21-31

Reifsteck, E. J., Gill, D. L., & Labban, J. D. (2016). “Athletes” and “Exercisers”: Understanding identity, motivation, and physical activity participation in former college athletes. *Sport, Exercise, and Performance Psychology, 5*(1), 25-38.

Ryan, R. M., & Deci, E. L. (2000). Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. *American Psychologist*, *55*(1), 68-78.

Ryan, R.M., Williams, G.C., Patrick, H., & Deci, E.L. (2009). Self-determination theory and physical activity: The dynamics of motivation in development and wellness. *Hellenic Journal of Psychology, 6*, 107-124.

Simon, J. E., & Docherty, C. L. (2014). Current health-related quality of life is lower in former Division I collegiate athletes than in non–collegiate athletes. *The American Journal of Sports Medicine*, *42*(2), 423-429.

Sorenson, S. C., Romano, R., Azen, S. P., Schroeder, E. T., & Salem, G. J. (2015). Life span exercise among elite intercollegiate student athletes. *Sports Health*, *7*(1), 80-86.

Strachan, S. M., & Brawley, L. R. (2009). Healthy-eater identity and self-efficacy predict healthy eating behavior: A prospective view. *Journal of Health Psychology*, *14*(5), 684-695.

Strachan, S.M., Fortier, S., Perras, G.M., & Lugg, C. (2012). Understanding variations in identity strength through identity theory and self-determination theory. *International Journal of Sport and Exercise Psychology*, *11,* 1-13.

Taylor, J., & Ogilvie, B. C. (1994). A conceptual model of adaptation to retirement among athletes. *Journal of Applied Sport Psychology, 6,* 1–20.

Teixeira, P. J., Carraça, E. V., Markland, D., Silva, M. N., & Ryan, R. M. (2012). Exercise, physical activity, and self-determination theory: A systematic review. *International Journal of Behavioral Nutrition and Physical Activity*, *9*(1), 1-30. https://doi.org/10.1186/1479-5868-9-78

Weight, E. A., Navarro, K. M., Smith-Ryan, A., & Huffman, L. T. (2016). Holistic education through athletics: Health and health-literacy of intercollegiate athletes and active undergraduate students. *Journal of Higher Education Athletics & Innovation*, *1*(1), 38-60.

Yazedjian, A., Kielaszek, B., & Toews, M. (2010). Students' perceptions regarding their impending transition out of college. *Journal of the First-Year Experience & Students in Transition*, *22*(2), 33-48.

Appendix A

Focus Group Interview Guide

What do you expect the transition out of college will be like? What will be easy about the transition? What will be difficult about the transition?

How do you think no longer being a college athlete will affect your physical activity? Your eating/diet quality?

What concerns do you have about your eating/nutrition right now?

How much of a priority in your life do you think physical activity will be in the future? What about healthy eating/nutrition?

What barriers do you expect to encounter? What will be most challenging about being physically active/eating healthy?

What do you think would help you make a positive transition out of college?

Which elements of the program did you like or find helpful?

What suggestions do you have for improving the program? Which elements would you omit or revise if the program was implemented again with other student-athletes?

Suppose you had one minute to tell another student-athlete about the program, what would you say?