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Self Reported Perceptions of Physical Demands on Athletic Training Students

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Context: According to the Commission on Accreditation of Athletic Training Education (CAATE) Standards for the Accreditation of Entry-Level Athletic Training Education Programs, athletic training students (ATSs) must complete clinical experiences that provide opportunities to integrate cognitive function, psychomotor skills, and affective competence as a part of their coursework.[1] These experiences expose students to the physical demands of the profession, and it is these activities that differentiate the demands of athletic training from other academic majors.
Objectives: To assess the self-reported perceptions of ATSs regarding the physical demands of their chosen major and their participation in sport and non-sport leisure activities.
Design: Descriptive research design.
Setting: Nine undergraduate Athletic Training Education Programs within the National Athletic Trainers' Association (NATA) District 10.
Subjects: 112 undergraduate athletic training students enrolled in Commission on Accreditation of Allied Health Education Programs (CAAHEP) accredited programs during the 2005-2006 academic year.
Main outcome measures: Respondents completed a modified form of the Baecke Questionnaire of Habitual Physical Activity[2] which subjectively measured the student's reported 1) school related activity; 2) participation in sport activity and 3) participation in non-sport leisure activity.
Results: The index for "school related activity" indicated that athletic training students perceived their chosen major as physically demanding. However, the indices for participation in sport and non-sport leisure activity were relatively low.
Conclusions: In spite of the physical requirements of the athletic training curriculum, athletic training student's relatively low rate of participation in sport and non-sport leisure time activity may have future health implications.
Key Words: Athletic Training Students, Baecke Questionnaire of Habitual Physical Activity, Physical Activity

As educators of Athletic Training professionals, it is important to expose students to the professional demands they may face in their future employment setting. Therefore, during the student's academic experience, it is essential to understand their perceptions of these demands and how lifestyle choices and the level of participation in physical activities outside their academic program may impact their future health and well being.

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Although the variation in occupational requirements for athletic trainers is becoming increasingly broad, according to the National Athletic Trainers' Association (NATA), most athletic training jobs continue to be related to competitive sports, with 21% of athletic trainers associated with colleges, universities and professional sports.[4] For certified athletic trainers employed in competitive athletic settings, the occupationally related physical demands are commonly understood.[5] Some of the routine physical demands typically required in this setting include: getting quickly to the site of an injured athlete, assisting an injured athlete from the field of play; the transporting of necessary supplies to and from specific athletic venues, and standing for prolonged periods of time. Also, in the case of a catastrophic situation, an athletic trainer may be required to perform such tasks as maintaining cervical in-line stabilization or performing cardiopulmonary resuscitation (CPR) while in a prolonged kneeling position. Thus a practicing clinician must be physically prepared to successfully complete the requirements of these tasks. When educating future athletic training professionals, it is imperative that educators expose the student to

a variety of clinical experiences that incorporate these physical demands. In other words, it is the clinical nature of athletic training that demands the opportunity for the student to practice the requirements of clinical practice in order to develop the necessary psychomotor skills and clinical proficiency.[1] Indeed, within the comprehensive education for future professionals in the field of athletic training at least two years of clinical experiences are required.[1]

Athletic trainers are often looked upon by athletes and coaches for information regarding how to enhance their physical performance through the use of appropriate activities. Athletic trainers may also serve as role models for practicing healthy lifestyle behaviors. To prepare athletic training students with the information needed about healthy lifestyles, all accredited educational programs provide course work and experiences in the areas of exercise physiology, nutrition, and personal and community health.[3] In spite of these educational experiences, several researchers have reported a less than optimal level of participation in a regular exercise program among college students, regardless of the major area of study.[6-8] For example, the US Department of Health and Human Services reports that approximately 40% of all college students did not participate in adequate amounts of physical activity.[9]

This has led researchers to study the importance of being physically active during the college years. One important finding of this research is the effect the lack of participation in physical activity may have on an individual's future health. According to the Surgeon General's 1996 report, lack of physical activity can be a risk factor in the onset of a number of pathological conditions including cardiovascular disease, diabetes, cancer, osteoporosis and obesity.[10] Moreover, many researchers view the college experience as a time that allows young adults the opportunity to form future behaviors and to explore activities which may become an integral part of their daily lives.[11-13] In a recent study of college alumni, Sparling and Snow [13] reported physical activity patterns established in the college years were maintained after graduation. Specific to the profession of athletic training, Cuppett and Latin[5(p. 281)] stated, "Certified Athletic Trainers are the primary health care providers for the physically active, and their advice may reflect their own health and fitness beliefs".

The goal of this research was to assess the self-reported perceptions of athletic training students about the physical demands of their chosen major. Also, the authors attempted to assess the level of participation by the athletic training student in sport and non-sport leisure activities while performing required clinical experiences.

Methods

A thorough review and research approval was received from the Human Investigations Committee from the representative institution before initiation of this study.

Subject Population

The Baecke Questionnaire of Habitual Physical Activity[2] was sent to the program directors at each of the nine Colleges and Universities with CAAHEP accredited Athletic Training Education Programs (ATEP) in the Northwest Athletic Trainers' Association, District 10, during the 2005-2006 academic year. Within each packet was a cover letter that explained the purpose of the study and a request to distribute the questionnaires to the undergraduate athletic training students enrolled in the program. The students were asked to complete the survey and return it to the athletic training education program director. The completed questionnaires were placed as a group in an unmarked envelope to assure anonymity, and returned to the principal investigator. Consent to participate in the study was implied by the completion of the questionnaire.

Instrument

A modified form of the Baecke Questionnaire of Habitual Physical Activity was used for this study (Appendix A). In its original format, the questionnaire consisted of 3 sections: the first section dealt with work-related activities; the second assessed participation in sport activity; and the last assessed participation in non-sport leisure activity.[2] For the present research, the wording of the first section was changed to reflect the student's academic requirements (i.e.; In "school" I lift heavy loads). The Baecke Questionnaire of Habitual Physical Activity has been shown to be a valid and reliable instrument for measuring habitual physical activity in several previous studies.[14-16]

Scoring

The questionnaire was scored following the procedures described by Cuppett and Latin.[4] The initial section of the questionnaire, assessing the physical demands of school activities, and the last section, assessing participation in non-sport leisure activity, were scored on a 5-point likert scale with each descriptor assigned a number; never (1), seldom (2), sometimes (3), often (4) and always (5). The "activity index" for school related and non-sport leisure activities represented a mean of responses where lower levels of activity were given a lower score, and responses which indicated increased activity were given higher scores. The scores indicating participation in "sports activities" were computed by multiplying the intensity code, the weekly hourly duration and the monthly proportion of activity.

1. The intensity code was determined by first assigning an intensity for each activity as defined by Ainsworth et al. [17] The intensity for each activity was then classified as either "high" (> 6.0 MET), moderate (3.0 to 5.9 MET) or low (< 3.0 MET). Each classification was then assigned a numerical value: 1.76 (for high); 1.26 (for moderate);and 0.76 (for low).
2. The time code was assigned based upon the number of hours per week indicated by the respondent, and was assigned a numerical value as follows: 0.5 (< 1 hour); 1.5 (1-2 hours); 2.5 (2-3 hours); 3.5 (3-4 hours); and 4.5 (4-5 hours).
3. Finally, the proportion code was assigned based upon

the number of months per year indicated by the respondent, and was as follows: 0.04 (<1 month/year); 0.17 (1-3 months/year); 0.42 (4-6 months/year); 0.67 (7-9 months/year); and 0.92 (>9 months/year).

Data analysis

For the data collected, the authors calculated means, standard deviations and ranges for the three categories – school related activity, sport-related activity and non-sport leisure-related activity. Frequency counts and Chi^2 analyses were also used to assess the consistency of specific responses and identify any patterns among the study population. In an effort to identify the correlation between the perception of the physical demands of the student's school activity and their participation in sports and non-sport leisure activity, a Pearson correlation coefficient was determined between educationally associated activity and participation in sport and non-sport leisure activity. Gender differences were assessed using one way ANOVA for each of the specific responses. The data was analyzed using SPSS version 11.5, and statistical significance was set at $p < 0.05$ for all analysis.

Results

A phone survey of the program directors in the CAAHEP Accredited Athletic Training Education Programs in Northwest Athletic Trainers' Association, District 10, identified a total of 180 athletic training students during the 2005-2006 academic year. In the present study, a total of 112 completed surveys were returned, for a response rate of 62.2%. All of the students indicated "athletic training" as their academic major. Of the respondents, 66 (58.9%) were female and 46 (41.1%) were male. The frequency counts for the school related and non-sport leisure activities are shown in Table 1. The specific distribution of the responses to the question comparing "educationally associated activity in comparison with others of their own age" is shown graphically in Figure 1. Similarly, the distribution of the responses comparing participation in "leisure time activity with others their own age" is shown in Figure 2.

Table 1. Frequency Counts for Physical Activities Associated with School and Leisure Time Activities (*p <0.05)

		Total n = 112				
Category	**Item**	**never**	**seldom**	**sometimes**	**often**	**always**
*As part of my school requirements . . .	I sit	1	3	44	55	9
	I stand	1	9	39	57	6
	I walk	0	3	17	59	33
	I lift heavy loads	5	38	49	18	2
	I am tired	0	7	35	44	26
	I sweat	8	58	34	7	5
*During leisure time . . .	I sweat	11	23	31	34	13
	I play a sport	4	24	45	36	3
	I watch television	4	18	39	41	10
	I walk	5	33	44	26	4
	I cycle	41	34	26	10	1

Of the 112 respondents, 55 (49.1%) reported participating in a "sports related" activity while matriculating through an athletic training education program. Of the respondents that participated in a sports related activity, 26 (56.5%) were male and 29 (43.9%) were female. There was no significant correlation between the perceived physical demands of school activity and participation in sports and non-sports leisure activity. Additionally there were no statistically significant differences for any of the activity indices computed between genders with the exception of sports participation. The mean activity scores for the three categories are summarized in Table 2. The Chi^2 estimates of consistency for all of the items in the questionnaire were statistically significant ($p < 0.05$).

Discussion

In 2002, Cuppett and Latin subjectively measured the physical activities of certified athletic trainers.[5] Their results identified a

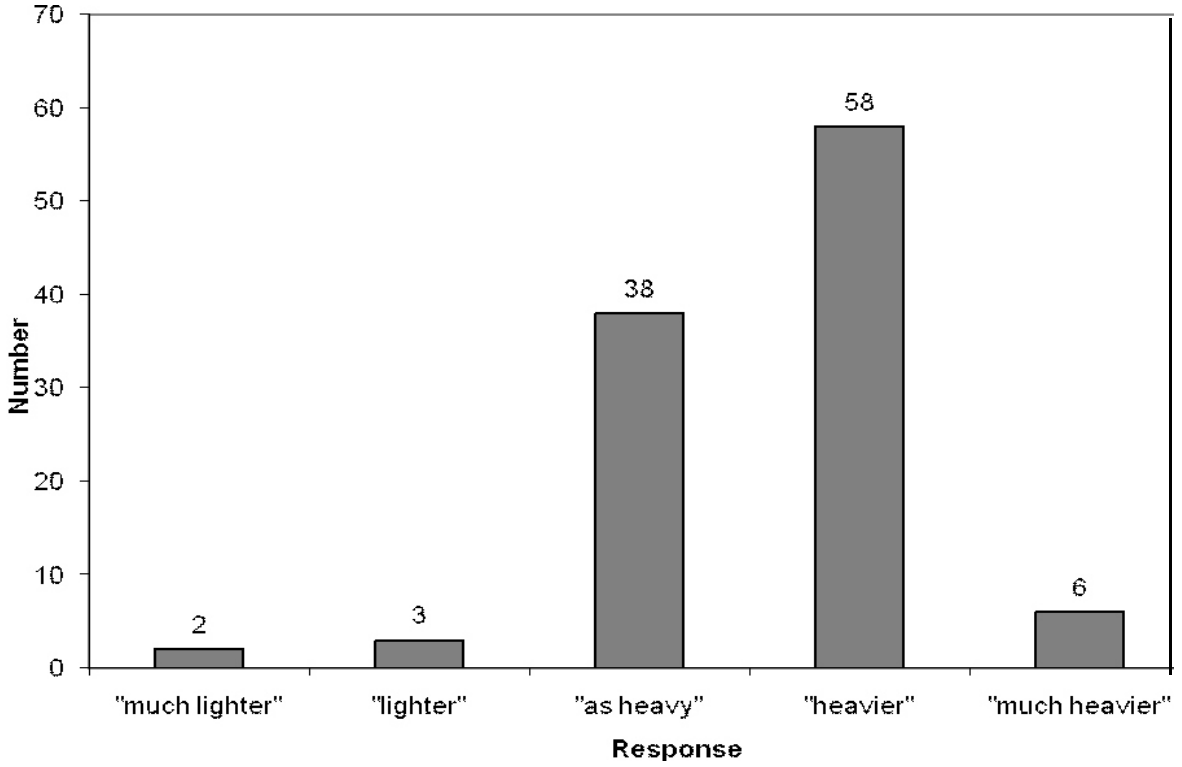

Figure 1. Frequency counts for the responses when asked to "compare the school related physical activity with others of their own age."

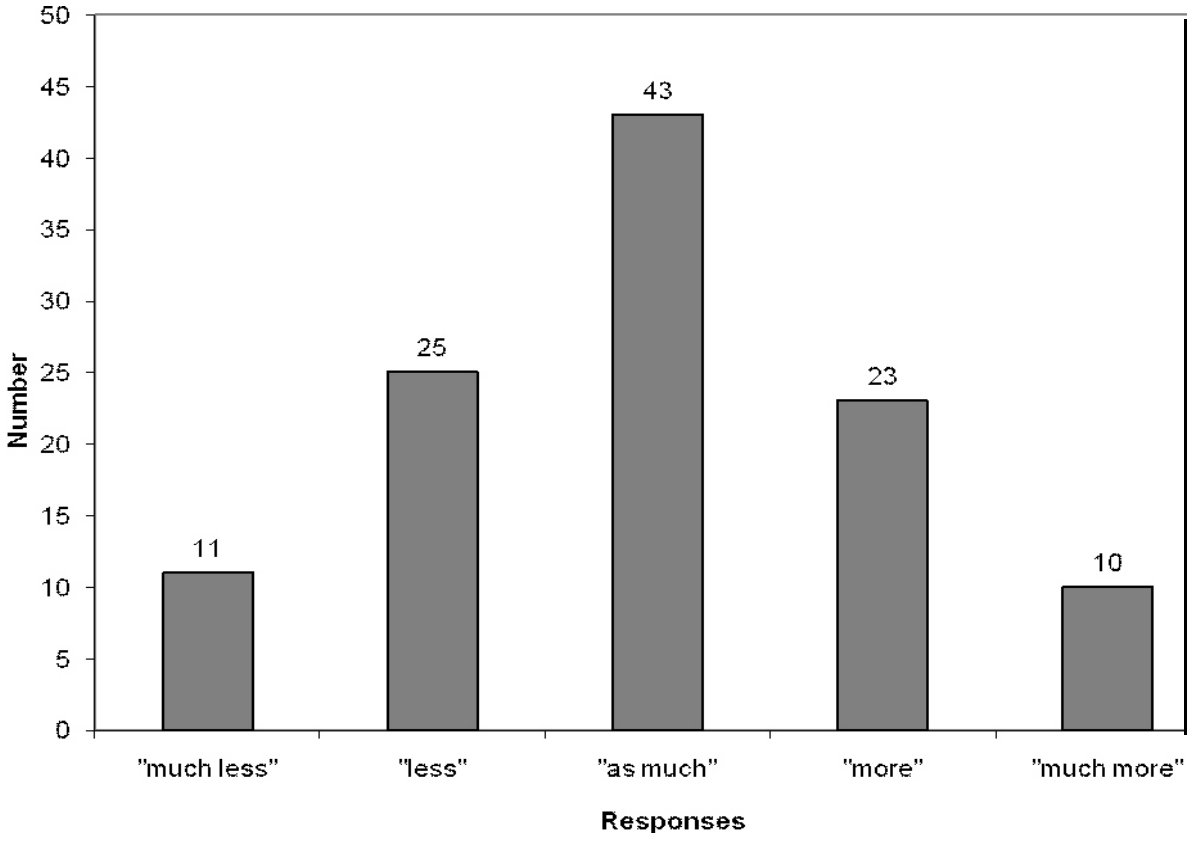

Figure 2. Frequency counts for the responses when asked to "compare participation in leisure time activity with others their own age."

Table 2. Summary of Activity Indices from all respondents (n=112)

Variable	Mean	SD
School Activity Index	3.4	0.959
Sport Activity Index$_{total}$	1.15	1.914
Sport Activity Index$_{reported}$	1.56	2.064
Leisure Activity Index	3.03	1.122

number of characteristics of physical activity which they classified by work setting, years of practice and gender. The present study attempted to measure physical activity patterns among athletic training students who represent the future of our profession. The main difference in the questionnaire in this study was the use of the term "school" in place of "work" to capture the physical demands associated with the athletic training major. The findings suggest athletic training students perceive the requirements of their academic major as physically demanding in nature. This was demonstrated by the consistency of responses that represented the physical demands of the athletic training major.

For example, when respondents were asked to evaluate the amount of time spent walking while completing their school activities, 82.1% responded with "often" or "always"; similarly when asked about "being tired", 62.4% of the subjects responded with "often" or "always". Additionally when asked about the frequency for "lifting heavy loads" during the completion of their school activities, 66.4% responded that they were asked to perform this task either "sometimes", or "often". Finally when the respondents were asked to compare their "school related physical activity to others their same age", greater than half of the respondents answered that the requirement was "heavier" (50%) or "much heavier" (7.1%). The results of the mean activity index for school related activities (3.40 ± 0.96) was higher then the "work activity index" reported Cuppett and Latin[5] of between 2.8 to 3.0 across four employment settings (High School, Clinic, College and other).

The clinical practice of athletic training is one that requires the ability to react appropriately to emergency situations in an effort to attend to an injured athlete. Similarly to police and fire personnel, athletic trainers must demonstrate a specific clinical competency and possess certain physical attributes when responding to emergency situations. In these other professions, it is not uncommon for specific physical tests to be required as a part of the application and / or evaluation process.[18-20] According to the CAATE Standards for the Accreditation of Entry-Level Athletic Training Education Programs, an appropriate health care provider (MD, DO, PA, NP) must perform an examination to verify that prospective athletic training students are able to meet the physical requirements (i.e., technical standards) with or without reasonable accommodation as defined by the Americans with Disabilities Act (ADA).[1]

The results of this study also suggest, that in spite of the physical nature of the academic requirements of the athletic training major, the respondents in this study did not consistently participate in non-sport leisure activities and participated in sport activities even less. The non-sports leisure activity index identified in this study (3.03) was higher than the findings of Cuppett and Latin,[5] who reported a range of 2.6 to 2.7 in the same category. On the other hand, this index was consistent with a subjective response of "sometimes" for participation with a physical activity during leisure time. Additionally the relative lack of participation in sports activities in the present study (sports activity index of 1.15), was lower than Cuppett and Latin[5] who reported a range of 3.1 to 3.3 in their study population.

A number of studies have shown that the predictors of physical activity outside of work, or in the case of the present study, school related activity, are multi-factorial.[8,12,21-28] In a study by Miller et al,[12] the predictors of participation in physical activity included age, gender, being an intercollegiate athlete and belonging to a social fraternity or sorority. Although the present study did not explore many of the aforementioned factors, an attempt was made to identify any gender differences. For the most part, the present study found no significant differences in school related or leisure time activity, but the results did suggest that males were more likely than females to participate in sport activities. The reason for this participation discrepancy has been studied by a number of other researchers, and can be attributed to: 1) body image issues, [15-26] 2) differing readiness for a change in activity level, [26] and 3) issues of self esteem.[22-27] A study by Kilpatrick et al[24] assessed the motivation for differing patterns of participation in sport and exercise activity in 233 college-aged students, and found that males preferred higher levels of motivation for challenge, competition, and social recognition than did females. These characteristics are consistent with sports participation, thus lending itself to a greater attraction to sport activities.

The promotion of physical activity in college students, whether as part of academic program or as part of sports and non-sports leisure activity, has far reaching health implications, and has been identified as one of the areas of emphasis in "Healthy People 2010."[28] In fact, the promotion of healthy lifestyles behaviors among college students has taken on its own area of emphasis and has been given the moniker "Healthy Campus 2010,"[29] where physical inactivity has been identified as 1 of the 6 priority health risks.

Conclusion

Athletic training students in District 10 of the National Athletic Trainers' Association perceive the physical requirements of their academic major to be consistent with those found for certified athletic trainers in the work setting and beyond those stipulated for students in other fields of study. This group of students also participated in sport and non-sport leisure time activity at relatively low rates.

Future research considerations

Similar to the study by Cuppett and Latin[5], this study was performed on a relatively geographically specific subject population. Thus, it may be advantageous to replicate this study nationwide to obtain a broader understanding of athletic training

students' perceptions. In addition, as suggested by Cuppett and Latin,[5] future research could identify of the actual energy expenditure of certified athletic trainers working in various settings to quantify a baseline for the physical attributes necessary to perform required tasks. This data would allow an ATEP to establish and assess minimum physical characteristics necessary for athletic training students through standardized physical testing. Finally, considering the importance of physical activity and healthy lifestyle behaviors in future health and wellness, future research should attempt to identify the underlying reasons for the relatively low participation in sport and non-sport leisure activity described by the athletic training students.

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Appendix A

Modified Baecke Physical Activity Questionnaire

The purpose of this study is an attempt to determine the activity level of undergraduate Athletic Training Students at CAAHEP accredited Athletic Training Education Programs (ATEP), through the use of activity inventory. We are requesting your participation in completing the following form as completely and as honestly as possible, after which, simply return the form in the unmarked manila envelope provided to your Program Director or Head Athletic Trainer. All of your responses will be anonymous and you are under no obligation to participate in this study.

1. What is your major? _____
2. Sex: _____

For the following questions please circle the word which best describes the amount of time you participate in the following activities during a typical weekday. The term "school" refers to any of your educational requirements (both academic and clinical).

3. At school I sit: Never Seldom Sometimes Often Always
4. At school I stand: Never Seldom Sometimes Often Always
5. At school I walk Never Seldom Sometimes Often Always
6. At school I lift heavy loads: Never Seldom Sometimes Often Always
7. After school I am tired: Never Seldom Sometimes Often Always
8. At school I sweat: Never Seldom Sometimes Often Always
9. In comparison with others of my own age, I think my educationally associated activity is physically:

   Much Lighter Lighter As Heavy Heavier Much Heavier
10. Do you play a sport? Yes No

    If yes, which sport do you play most frequently? _____

    How many hours a week? <1 1-2 2-3 3-4 >4

    How many months per year? <1 1-3 4-6 7-9 >9

    If you play a second sport, which sport is it? _____

    How many hours a week? <1 1-2 2-3 3-4 >4

    How many months per year? <1 1-3 4-6 7-9 >9
11. In comparison with others of my own age, I think my leisure time physical activity is:

    Much Less Less As Much More Much More
12. During leisure time I sweat: Never Seldom Sometimes Often Always
13. During leisure time I play a sport: Never Seldom Sometimes Often Always
14. During leisure time I watch television: Never Seldom Sometimes Often Always
15. During leisure time I walk: Never Seldom Sometimes Often Always
16. During leisure time I cycle: Never Seldom Sometimes Often Always
17. How many minutes do you walk and/ or cycle per day to and from work, school, and shopping?

    <5 5-15 15-30 30-45 >45