Examining the Results of Podcast Relaxation Techniques in Higher Education

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Abstract

College students face many stressors such as academic course work, finances, living away from home, and planning for the future. Knowledge of stress management techniques can assist students in coping with such stressors, especially when disseminated through convenient technologies which are increasingly common in their personal and academic lives. This study examined students' responses to stress management techniques provided via podcasts in health and stress classes. Seven techniques were each practiced for seven days, with statistically significant increases in relaxation reported from day one to day seven in five of the seven techniques. Self-reported outcomes were positive and included perceptions of decreased stress symptoms after practicing the strategies. Podcasts on stress management techniques could be used with students, faculty, or staff at other learning institutions because of their effectiveness in reducing stress and promoting relaxation.

Key words: Podcasting, stress, college students

Introduction

With technologies in education such as classroom laptops, Smart Boards, blogs, vlogs, and educational software becoming so common, the way individuals teach and learn is changing (Anspaugh & Ezell, 2010). One of the new technologies recently introduced into the field of education is podcasting. Podcasting has been defined as "an automated technology that allows listeners to subscribe and listen to digitally recorded audio shows" (Flanagan & Calandra, 2005). It has also been described as "the creation of audio or video files for use on iPod and other MP3 players" (Baker, Harrison, Thornton, & Yates, 2008). Podcasting has been used to disseminate everything from university orientation packages (e.g., class schedules, advice, fight song lyrics) and interviews to classroom lectures (Flanagan & Calandra, 2005).

Another type of information that can be broadcast via podcasts is stress management. During the college years, stress levels related to academics can be especially high (Iglesias et al., 2005). Undergraduate and graduate students struggle with pressure to succeed academically in addition to experiencing anxiety about financial worries, choosing a career, and living away from home (Greenberg, 2009). In an article examining stress management within the undergraduate medical curriculum, researchers point out that an important goal in stress management training for this population is improving the students' ability to cope with the challenges of their schooling and their future profession (Perry & Purkis, 2008).

In a study of undergraduate pharmacy and biochemistry students, participants with professed higher stress were found to be more interested in participating in a program for stress management. A stress management pilot program was developed that presented stress management techniques including a) deep breathing, b) relaxation, c) guided imagery, d) cognitive restructuring, and e) time management. These techniques decreased levels of anxiety, anger, and neuroticism when comparing pre- and post-questions (Iglesias et al., 2005). Stress management classes which educate students about strategies for handling stressors can be valuable since participants can learn to minimize negative consequences resulting from distress and control their responses to stress (Somerville, Allen, Noble, & Sedgwick, 1984). Podcast learning is a viable and accessible strategy for students to use in learning how to manage stress.

Podcast learning is becoming more prevalent at universities as a teaching tool. In a pilot study involving an aviation science class, a supplemental abbreviated lecture was available for playing on MP3 players, personal computers, or university computers. These podcasts could be accessed throughout the semester. No significant differences were noted in quiz results between students provided with podcasts and those for whom podcasts were not available. However, the researchers believed the idea had enough merit to repeat the procedure with a larger sample size (Baker et al., 2008).

Another study sought to determine the amount of student usage of audio and video podcasts of marine science lectures and to assess students' feedback regarding the podcasts. Students used podcasts to help them take notes, to "catch up" after a missed class, to study for tests, and to have the entire lecture available. The overwhelming majority of respondents (93%) wanted more lectures available in this format. Some students however reported problems downloading video podcasts because of the large size of files, and a few students needed technical assistance with the process (Copley, 2007).

In a physical education teacher education program, podcasting was utilized for a Principles of Games course. After each lesson a podcast was developed that included important pedagogical points mentioned in class. Students found these podcasts helpful with studying for exams, establishing rapport between teacher and student, and preparing curriculum content (McNeill, Mukherjee & Singh, 2010).

Convenience and availability may allow podcast learning to easily fit into a tight schedule, with the added benefit of allowing a student to listen to the information repeatedly until it is mastered. Researchers addressing stress management in the undergraduate medical curriculum believe that it is crucial to introduce students to stress management strategies by having traditional learning techniques used in conjunction with more technologically advanced methods (Perry & Purkis, 2008). For students who are already juggling commitments and who might perceive taking a stress class as an additional burden, the idea of learning stress management techniques through the use of podcasts could be ideal.

The articles referenced above involved stress management and health, or podcasting, but not both topics. As a result, this study

examined the effects of stress management techniques taught via podcast learning within undergraduate health and stress classes at a regional university in the U.S. The purpose of the study was to determine whether significant differences occurred in participants' perceived relaxation following the first day of practicing a stress management technique as compared to their perceptions after the seventh day of practice. Researchers also sought to ascertain which techniques provided more perceived relaxation to the participants.

Methods

For this study, an appropriate ethical review through the university's Institutional Review Board (IRB) was completed. All student participants received consent forms outlining the purpose of the study, description of procedures, and information about discomforts, benefits, confidentiality, and voluntary participation. The form assured students that they could elect to have their survey responses pulled from the study data. However, performing the techniques and responding to how they feel after practice is a graded requirement of the health and stress courses. In addition, no responses for anyone under the age of 18 were included in the study data in accordance with IRB requirements.

In the summer of 2007, development of materials including podcasts, class instruction and the survey began. Seven podcasts were written by one of the class instructors and based on stress management strategies commonly found in most college stress textbooks, including the techniques of a) time management, b) autogenic training, c) deep breathing, d) meditation, e) cognitive restructuring and positive thinking, f) guided imagery, and g) progressive neuromuscular relaxation (PNR). Kinesiology and health studies instructors and graduate students were recorded reading scripts for each stress management technique for these podcasts. These recordings ranged in length from eight to 20 minutes. Soothing music was downloaded at no charge from the internet and added into the background.

A pilot study was conducted in fall 2007 with undergraduate health and stress classes. Based on student and faculty comments, revisions were made to the podcasts to improve the content and background music of each of the seven stress management strategies. Following the pilot study, implementation of the full study began in spring 2008.

The participants in this study were undergraduate students enrolled in a health and stress course. Data from these classes were collected over a two year period of time through 2008 and 2009. The classes were led by three different instructors using the same research protocol which included the same schedule for practicing techniques. First, the relaxation strategy was explained by each instructor based on common curriculum, and then practiced in class. On the first day, participants practiced the technique while listening to the podcast as it was played from an MP3 file through Blackboard during their health and stress class. After practicing the strategy, they completed their day one survey describing the initial feelings derived from performing the technique. Students were instructed to practice the technique for six more days on their own, with reminders provided in class and via email. Students could access these podcasts via a computer through Blackboard, download them to their own MP3 or iPod player, make a compact disk (CD) of the recordings, or use an MP3 player provided by the course instructor. On the last day (day seven) of practice, they completed the survey again describing their feelings about practicing the technique. This procedure was repeated for the remaining six stress management strategies. Whenever possible, students had the opportunity to complete the day one survey in class on laptop computers right after practicing the stress management strategy. When problems occurred with technology, such as inability to access the internet, then students completed the survey on their own later that day outside of class. Students were reminded orally and via emails by the instructors to complete the survey after the seventh day of practice since it fell on a day when the class did not meet.

The study participants completed the items via SurveyMonkey™ (http://www.surveymonkey.com), a software program used for survey development and distribution and data collection that was linked through Blackboard. The questionnaire contained 11 items, with an additional area available for written comments. Questions that were included addressed grade classification, age (over or under 18), gender, major, day one or day seven practice, technology used to access the strategy, strategy practiced, instructor, and location of practice.

In addition, study participants rated nine statements on a Likert scale of very untrue (1) to very true (5) detailing their feelings about the practice. For these nine items, ratings were summed with a possible range of scores from 9 to 45 with higher scores indicating more positive effects. Cronbach's Alpha for this nine item scale was .87. These nine statements, taken from Greenberg's Comprehensive Stress Management textbook, were used to assess

Table 1. ***Day One and Day Seven Survey Questions***

Statement	Very true (5)	Somewhat true (4)	I'm not sure (3)	Somewhat untrue (2)	Very untrue (1)
It felt good.					
It made me feel relaxed.					
I handle my daily tasks better than I usually do because of this.					
It was an easy strategy to learn.					
I was able to close out my surroundings while practicing this strategy.					
I did not feel tired after practicing this strategy.					
My body felt warmer directly after trying this strategy.					
Any stress symptoms I had (headache, tense muscles, anxiety) before doing this strategy disappeared by the time I was done.					
Each time I concluded this strategy, my pulse rate was much lower than when I began.					

the subject's perceptions about relaxation and stress relief resulting from the stress management technique practiced. The statements appear at the end of each chapter on stress management techniques (Greenberg, 2009). See Table 1 for a list of the nine statements.

Data from the participants' surveys were compiled into Excel spreadsheets and prepared for analyses. Only participants who were 18 or older at the time of the study were included in the analyses. Participants' responses were eliminated from the study if they did not contain at least four sets (out of a total of seven) of day one and day seven responses. Reasons for not meeting this criterion were: participants did not complete at least four techniques, participants indicated two completed day one surveys for a technique rather than a day one and a day seven survey, or students completed the survey multiple times for the same technique.

Data from the four semesters were merged and then imported into SPSSX 16. Data were analyzed using descriptive statistics, *t*-tests, and ANOVA. *T*-tests were conducted to establish differences in day one and day seven means of each of the seven relaxation techniques, as determined by the summation of the nine item scale. ANOVA was conducted with day seven overall scores to determine if there was a significant difference in the means, with Tukey post hoc indicating where differences occurred.

Findings

In this quasi-experimental study, the number of participants for each semester (both total and qualifying) is presented in Table 2. Based on the previously mentioned criteria for inclusion in the study, the response rate was 68%. Each participant provided between eight and 14 responses (for example, if a student completed four techniques and answered the day one and day seven survey questions, this would provide a total of eight responses). As indicated in Table 2, 176 subjects qualified for inclusion in the study. With each student giving between eight and 14 responses, the total number of responses equaled 2034. Responses broken down by semester, university classification, and gender are presented in Table 3.

Methods used to practice the stress management strategies and access the podcasts were iPod or MP3 players, which were used 20.1% (409 responses) of the time, computers 76% (1545 responses), and CD players 2% (41 responses). No technology (performing the technique on one's own without guided practice) was used 1.9% (39 responses). The total number of completed stress management strategies was 15.6% (318) deep breathing; 15.2% (310) progressive neuromuscular relaxation; 13.2% (268) positive thinking/cognitive restructuring; 15% (306) time management; 14.1% (286) autogenic training; 14.4% (292) guided imagery; and 12.5% (254) meditation.

Table 2. ***Number of Participants and Response Rate***

Semester	Number of participants	Qualifying participants
Spring 2008	89	56
Fall 2008	67	55
Spring 2009	47	22
Fall 2009	57	43
Total	260	176
Response rate		68%

Table 3. ***Breakdown of Responses by Semester, Classification, and Gender****

Semester	Number of responses	Percentage of responses
Spring 2008	648	31.9
Fall 2008	652	32.1
Spring 2009	248	12.2
Fall 2009	486	23.9
Classification		
Freshman	120	5.9
Sophomore	496	24.4
Junior	819	40.3
Senior	585	28.8
Graduate Students	14	.7
Gender		
Male	413	20.3
Female	1621	79.7

*Each subject provided between 8 and 14 responses.

A majority of participants were enrolled in one instructor's course (1060 or 52.1% of responses), with the rest of the participants divided between the other two instructors representing 38% and 9.9% of the responses. Most of the participants performed the strategies at home (66.3% or 1348 responses), with 32.3 % (655 responses) from students practicing at school, and the remaining 1.5% or 30 responses done somewhere else. Other locations of practice included at work, in the hospital, and in the car.

In order to establish which stress management techniques provided the most perceived relaxation from day one to day seven of practice, independent t-tests were calculated to determine differences in the means (Table 4). Overall means (day one and day

Table 4. ***Day 1 and Day 7 Means for Seven Techniques***

Strategy		n	Mean	SD	T	df	Sig
Deep Breathing	Day 1	159	33.3	5.7	-4.0	316	.000*
	Day 7	159	35.8	5.3			
PNR	Day 1	155	34.3	6.5	-2.3	308	.023*
	Day 7	155	36.0	6.6			
Positive Thinking	Day 1	134	33.6	6.2	-2.6	266	.009
	Day 7	134	35.6	6.1			
Time Management	Day 1	153	34.0	6.0	-1.7	304	.091
	Day 7	153	35.1	5.9			
Autogenic Training	Day 1	143	35.8	5.6	-1.1	284	.282
	Day 7	143	36.6	6.8			
Guided Imagery	Day 1	146	35.3	6.1	-2.4	290	.018*
	Day 7	146	37.0	6.3			
Meditation	Day 1	127	34.4	7.2	-3.1	252	.002*
	Day 7	127	37.1	6.3			

seven combined) and standard deviations of the nine-item scale are reported for each technique (Table 5). An ANOVA determined that the overall means were significantly different between the seven relaxation techniques in the study, F (6, 2027) = 4.11, $p \leq .05$. A Tukey post hoc comparison was done to determine where differences occurred (Table 6).

Table 5. ***Overall Means and Standard Deviations of Relaxation Techniques***

Technique	n	Mean	SD
1 Deep Breathing	318	34.6	5.7
2 Progressive Neuromuscular Relaxation (PNR)	310	35.2	6.6
3 Positive Thinking/Cognitive Restructuring	268	34.6	6.2
4 Time Management	306	34.5	5.9
5 Autogenic Training	286	36.2	6.2
6 Guided Imagery	292	36.2	6.2
7 Meditation	254	35.8	6.9
Total	2034	35.3	6.3

Table 6. ***Comparisons of Relaxation Techniques***

		Mean difference	Std. Error	Sig.
Deep Breathing (34.6)	Autogenic Training (36.2)	-1.6	.5	.036
	Guided Imagery (36.2)	-1.6	.5	.029
Positive Thinking (34.6)	Guided Imagery (36.2)	-1.6	.5	.045
Time Management (34.5)	Autogenic Training (36.2)	-1.6	.5	.028
	Guided Imagery (36.2)	-1.6	.5	.022

Discussion/Implications

Previous studies have found positive outcomes of stress management programs, including increased emotional coping and reduction of symptoms of distress (Iglesias et al., 2005; Somerville et al., 1984). In this study, using podcasts to practice relaxation techniques provided participants with higher self-reported scores indicating beneficial stress relief in five of the seven techniques. Statistically significant increases in self-reported levels of relaxation from the first day to the seventh day occurred when subjects practiced deep breathing, progressive neuromuscular relaxation, positive thinking/cognitive restructuring, guided imagery, and meditation. Of the two podcasts that did not show significant change, one was about time management which provided instruction regarding strategies designed to prevent future stress, as well as relaxation through deep breathing and imagery. The intended results of the time management podcast are more long ranging and not as immediate as those of the other podcast techniques. With more time available than the seven day practice period, significant differences might have resulted from this podcast.

The other technique that did not show significant change in responses from day one to day seven surveys was autogenic training. Although the change was not significant, this technique did show the highest day one mean and overall mean of all relaxation techniques (see tables 4 and 5). Autogenic training and guided imagery provided the highest self-reported relaxation of the seven techniques. In our study undergraduate students from a variety of majors experienced relaxation benefits from practicing stress management techniques provided via podcast learning. Incorporating such techniques into a curriculum could be helpful, especially in high stress programs such as undergraduate medical education (Perry & Purkis, 2008).

There are several limitations to this study. One is its use of a convenience sample which may not be representative of students at this university or other institutions of higher learning. However, the subjects were from a wide range of academic majors, which provided for a representative sample enhancing confidence in our findings. Another limitation is that the results of the study are self-reported and may not accurately represent student experiences. With the exception of two days of in-class instruction, techniques were primarily practiced outside of class. Therefore, monitoring the students' actual completion of each podcast as assigned was challenging.

Although students voluntarily consented to allow their survey responses to be included in the study, practicing and reporting perceptions about each technique was a course requirement. Participating to achieve a grade may have affected the subjects' motivation, resulting in a practice that was not focused on fully experiencing and benefiting from the relaxation techniques. However, because this participation influenced the students' grades, perhaps more students were exposed to these techniques (and benefits from the techniques) than would normally occur.

Lastly, three instructors led classes that participated in this study so variation in guidance and instruction may have affected the perceptions or numbers of qualifying responses in some way. However, the same protocols were used to present each chapter and podcast to prevent instructor bias and to provide consistency in the study. Although no statistical analyses were conducted to determine differences among instructors, this is an area that may warrant future examination.

Additional studies should also consider investigating a) benefits of relaxation techniques provided to graduate students via podcast, b) participants practicing fewer techniques but each for a longer period of time, c) including faculty in a study of these techniques available by podcasts and d) gender differences with regard to technique preferences and benefits from practice. Further, the university at which the study was conducted has a mandatory class for all freshman students. This would be a perfect vehicle for providing access to and instruction about these relaxation techniques and for studying their effects.

Copley (2007) reported that students in higher education who were exposed to podcast learning almost unanimously requested more instruction available in this format, with only a minimal number of students requiring assistance with the technology. The repetition and reinforcement that is possible with podcast learning can promote learning and academic achievement, and address diverse learning styles of students. McNeill et al. (2010) noted that use of podcast learning with physical education teacher education students not only promoted learning but also enhanced teacher-student relationships.

The ability to download material from podcasts for future use provides easy accessibility and minimal barriers for continued practice. With iPods, MP3 players, and podcasts becoming so widespread, students' comfort level with this learning tool will

only increase. In this study, participants required less technical assistance each successive semester. Using podcasting to teach these coping techniques could assist many students as they face stressors throughout their college careers and into their futures. Further, podcast learning could be used to successfully provide other important health information to this population.

References

Anspaugh, D.J., & Ezell, G. (2010). *Teaching today's health.* (9th ed.). San Francisco, CA: Benjamin Cummings.

Baker, R., Harrison, J., Thornton, B., & Yates, R. (2008). An analysis of the effectiveness of podcasting as a supplemental instructional tool: A pilot study. *College Teaching Methods and Styles Journal, 4* (3), 49-54.

Copley, J. (2007). Audio and video podcasts of lectures for campus-based students: Production and evaluation of student use. *Innovations in Education and Teaching International, 44* (4), 387-399. doi: 10.1080 /14703290701602805.

Finley, R. (1999). SurveyMonkey [computer software]. Palo Alto: SurveyMonkey.

Flanagan, B., & Calandra, B. (2005, November). Podcasting in the classroom. *Learning and Leading with Technology*, 20-25.

Greenberg, J.S. (2009). *Comprehensive stress management* (5th ed.). Boston, MA: McGraw Hill.

Iglesias, S., Azzara, S., Squillace, M., Jeifetz, M., Lores Arnais, M., Desimone, M., et al. (2005). A study on the effectiveness of a stress management programme for college students. *Pharmacy Education, 5*(1), 27-31. doi:10.1080/15602210400028614.

McNeill, M.C., Mukherjee, S., & Singh, G. (2010). Podcasting in physical education teacher education. *International Council for Health, Physical Education, Recreation, Sport and Dance Journal of Research*, V(1), 16-19.

Perry, J., & Purkis, N. (2008). Stress management within the undergraduate medical education curriculum. *Journal of Holistic Healthcare, 5*(3), 26-31.

Somerville, A., Allen, A., Noble, B., & Sedgwick, D. (1984). Effect of a stress management class: One year later. *Teaching of Psychology, 11*(2), 82. ■