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Review

Using the Fitness Challenge to Teach the Principles of Conditioning and Improve Campus Physical Activity

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Introduction

The goal of KINES 432 Conditioning Procedures is for students to develop the skills to appropriately prescribe exercise and conditioning that will enhance the student's ability as a practitioner to help others improve conditioning and achieve their health, fitness, and performance goals. The focus is on program objectives, planning, exercise analysis, and prescription as well as the supporting theories, rationale, and research. Application of concepts occurs via projects, service-learning and laboratory experiences. KINES 432 is also designated a university Finishing Foundations course. Boise State University's Foundational Studies Program provides undergraduates with a broad-based education that spans the entire university experience. The university learning outcomes to be met in this course can be found in Table 1 along with the course-specific learning outcomes.

My goal as a teacher is not to take students by the hand and lead them down a path to a predetermined destination; rather, it is to share a journey through territory with which I am more familiar than they are. I want to enable them to be life-long learners and prepare them to be content area professionals with the foundation and ability to adapt to change. Students need to be able to critically think and apply their knowledge to a myriad of situations, rather than becoming a recorder that only plays back that which has been put in. Students should be appropriately challenged to use their own resources to become better people, to realize their potential, and develop the confidence to work toward their goals. To actually learn and retain material, students need to experience the content and not just hear about it.

Experiential learning theory states that, "Learning is the major process of human adaptation." (p. 149) and "... is the process whereby knowledge is created through the transformation of experience." (p. 155) (7). Experience and reflecting on that experience are what lead to concept development and modification (7). Learning is not simply memorizing facts and figures, it holistically involves thinking, feeling, perceiving, and behaving (7). It is an interchange between the person and the environment – the environment acts on the person, the person acts on the environment and both are changed by objective conditions and subjective experience (7). Learning is not a discrete process in that the individual begins each new experience with a clean slate; rather, it is based on the continuity of consciousness because people

remember what they previously learned and apply it to new situations (7). This interaction and potential conflict between previous knowledge and new experiences must be addressed and this is where learning occurs as personal theories about what/why things happen and what actually happens are resolved (7). Ideally, "learning is by its very nature a tension- and conflict-filled process." (p. 147) and one of the critical jobs of educators is to help students with this process, to help with the formulation of new ideas, the resolution of conflict between experience and old ideas, and the reformulation of knowledge (7). Lastly, evidence supports the effectiveness of experiential learning (6).

The need and justification for experiential learning seems to be growing stronger as the undergraduate student population changes. Twenge (2017) has labeled the generation of students born in and after 1995 as the iGen (14). (1995 was chosen as there was a noticeable shift in mental health around 2011 because of the use of technology in general, and smart phones in particular (14).) iGen youth are taking longer to grow up, feel less entitled and are less narcissistic, confident, and happy, and are yet more vulnerable than the previous generation (14). This generation also tends toward increased loneliness, symptoms of depression, and less life satisfaction (14). They have a greater desire for safety which makes them more risk averse (14). Some of these traits may be due to their parents more actively solving problems for them and their experiences of how people are treated on social media (14). Because of the pace at which their world moves, both virtually and in reality, iGen students tend to become bored very quickly, especially without technology (12). iGen students prefer to connect virtually and to express creativity through technology (12). This can lead to difficulty with empathy because of their aversion to risk and lack of face-to-face interactions (12). In addition, the pace and the distractions of technology coupled with the ease of obtaining information results in students developing less depth of learning (12). The combination of their aversion to risk and reduced deep learning results in the current undergraduates attending college tending toward increased difficulty in developing critical and creative thinking (12). Thus, the iGen student seems inadequately prepared for the realities of a career in a field focused on people. Kinesiology graduates pursue athletic training, cardiac rehabilitation, coach-

ing, occupational therapy, personal training, physical education, physical therapy, strength and conditioning coaching, etc. – all people-oriented jobs with high face-to-face interactions (2).

The use of service-learning was initially a pedagogical decision made in KINES 432 as it afforded students the opportunity to work toward learning outcomes 1 – 7 (Table 1) and is such a valuable tool in experiential learning. Service-learning is giving of oneself to their community with the intent of enhancing the knowledge gained in the classroom, learning about critical community issues, and encouraging students to be active citizens (3). The service-learning goals were initially for students to actively observe and participate in the conditioning process and to relate course content to the “real world” problems of physical inactivity and the associated health complications. In the original iteration, groups of four to five students were going to assist coaches from local non-profit sport teams in their event-specific conditioning. Unfortunately, with the relatively small size of the Treasure Valley community and the large enrollment in the course, there were insufficient athletic team opportunities and many students ended up at area high schools helping with weight training or fitness classes. This led to a variety of experiences from simply observing to being the lead strength and conditioning coach with a range of involvement from insignificant to overwhelming.

It was at the same time that this realization that the current service-learning approach was not working as intended was taking shape that former Boise State University President Bob Kustra announced a campus goal for Boise State University to become the healthiest campus in America in his August 2014 and 2015 State of the University Addresses (8, 9). The initiative was based on the health and fitness trends in the United States and Idaho. In the United States, 33% of adults are overweight and 38% are obese (5). Health care for those with chronic conditions accounts for 86% of health care costs; \$147 billion are spent annually for health care related to obesity and \$117 billion on conditions related to insufficient physical activity (5). Physical activity reduces the incidence and effect of seven of the ten most common chronic conditions, yet almost 80% of Americans do not meet the recommended 150 – 300 minutes of moderate, or 75 – 150 minutes per week of vigorous, exercise per week (10). Included in the recommendation is two or more days of muscle-strengthening exercises for the major muscle groups (10). In Idaho, 37 % of adults are overweight and 27% are obese (5). Figure 1 indicates the physical activity behaviors of adults in Idaho in 2016 (5).

The intersection of the realization that the service-learning projects were not meeting the learning outcomes and the university president’s challenge to improve the health of the university community reminded this author of the Fitness Challenges that are often used in the fitness industry. Gyms, trainers, magazines, and fitness centers often conduct contests to see who can improve various measures of fitness and/or performance to attract and motivate clients. These fitness challenges are goal oriented and time limited, generally within the range of 4 – 12 weeks. The question became, could a fitness challenge approach be used to help others improve their health and fitness, to address the physical inactivity epidemic, and to provide students with more experiential learning than they were currently getting?

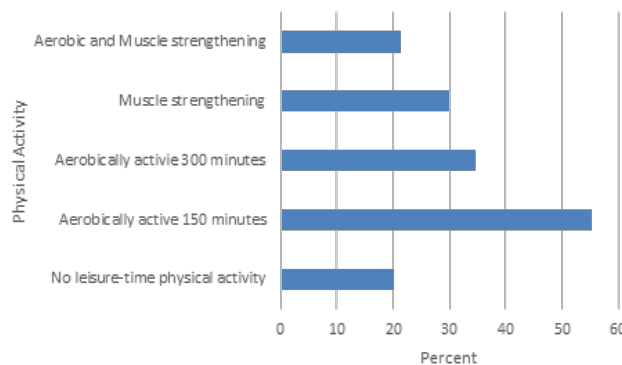


Figure 1. Physical activity behaviors of adults in Idaho in 2016 (5).

Table 1. University Learning Outcomes (1 – 4) and course-specific learning outcomes (5 – 7) for KINES 432 Conditioning Procedures.

1.	Write effectively in multiple contexts for a variety of audiences.
2.	Communicate effectively in speech, both as a speaker and listener.
3.	Engage in effective critical inquiry by defining problems, gathering and evaluating evidence, and determining the adequacy of argumentative discourse.
4.	Think creatively about complex problems in order to produce, evaluate, and implement innovative possible solutions, often as a member of a team.
At the completion of this course, the student will be able to:	
5.	Develop and implement safe and effective evidence-based prescriptions to train athletes and clients for the primary goals of improving athletic performance and fitness to include: <ol style="list-style-type: none"> Energy systems. Speed and power. Strength. Flexibility. Agility Injury rehabilitation and prevention Physical appearance.
6.	Analyze and evaluate exercise prescriptions prepared by self and others.
7.	Discuss nutrition and performance-enhancing substances.

Fitness Challenge Description

The Fitness Challenge was initiated in the fall 2016 semester and has continued and improved since then. It is a friendly competition between Boise State employees to see who can improve their health and fitness the most across the semester. Faculty and staff commit to participate for 10 weeks and KINES 432 Conditioning Principles students provide personal training. The purpose of this semester-long project is to help faculty and staff improve their health and wellness by providing a knowledgeable trainer and external accountability and to help students learn exercise prescription, teaching, professionalism, and leadership. (Specific program objectives are in Table 2.) Clients and personal trainers agree to meet a minimum of two times per week for ten weeks. Personal trainers develop and guide clients through an exercise routine designed to help participants meet their health and fitness goals. Participants compare before/after data: height, weight, body mass index (BMI), % body fat (as determined by bioelectric impedance), resting heart rate, blood pressure, and goal appropriate tests. Those clients making the most significant improvement are awarded prizes (as are their personal trainers).

For those students who have paid personal training experience, service-learning opportunities with the Fitness for Life program (older adult strength training) are provided instead. Table 2

A critical concern for a program of this nature is supervision. Based on student and participant schedules, there is a potential for 25 hours per week of training time. This concern has been addressed by recruiting Kinesiology graduate student interns. Supervising interns gain program management, supervision, and assessment experience by helping to administer the program, supervise undergraduates, provide direction and feedback, and assess student learning. The internship is for two semesters and two graduate students are recruited in staggered semesters so that the more experienced student can help the less experienced acclimate and learn the protocols. A Graduate Student manual with policies, procedures, and helpful hints has been developed and is revised as needed.

Table 2. Fitness Challenge-specific objectives.

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| <ol style="list-style-type: none"> 1. Expose students to the experience of working with individuals and helping those individuals meet their health, fitness, and/or performance goals. 2. Help students enhance teaching and leadership skills while developing professionalism and confidence. 3. Provide students with the opportunity to think critically about conditioning/physical activity and to apply course concepts. 4. Have students demonstrate their ability to conduct a needs analysis, prescribe exercise, and implement an appropriate exercise routine that moves a client toward their health, fitness, and/or performance goals. 5. Provide faculty and staff time, training, incentive/motivation, and external accountability to improve their health and fitness. |
|---|

Facilities are also a key consideration. The Kinesiology department at Boise State University has a small teaching weight room. This space is approximately 2000 square feet and has a variety of basic weight machines, free weights, and cardio equipment. This facility is primarily for instructional purposes and houses the Fitness Challenge, Adapted Physical Education, and the Fitness for Life programs. Alternatively, university employees with Campus Recreation (Rec) Center memberships may choose to train at this facility if they prefer. The Campus Rec at Boise State University is a multiuse facility modeled after large-scale fitness centers. It has multiple weight rooms, basketball and racquetball courts, aerobics studios, an indoor walking track, cardio equipment, a climbing wall, a pool, classrooms, a fitness office, complete locker rooms, fitness classes, and fee-based personal training in addition to outdoor programs and facilities (1). A memorandum of understanding has been generated that allows KINES 432 students to train clients for the Fitness Challenge. Students have to follow Campus Rec policies, wear course-identifying t-shirts, and carry an emergency radio.

Students complete an on-line form during the first week of classes to indicate their training availability. Potential training or open gym hours are 7:00 – 9:00 a.m., 12:00 – 1:00 p.m., and 4:00 – 6:00 p.m. Monday through Friday (this varies based on course schedules) and students select the hour and two days that they are available to train with first, second, and third choices. On the Monday of the second week of classes, participant regis-

tration forms are created based on student availability. Two participant slots are generated for each student. (While training two clients is more difficult for students, we have found that doing this increases the likelihood that students will have at least one client to train for the duration of the Fitness Challenge.) Client registration forms are made available and an announcement is sent out via the employee email newsletter. After the first year, participating clients were asked to donate a minimum \$30 registration fee to the Kinesiology department scholarship fund and the School of Allied Health Sciences matches this donation. The idea behind this was that clients might be more likely to maintain participation if they had a financial stake in the Challenge. As clients register, matches are made with students and an email is sent out to introduce the client and student and provide basic instructions for getting started.

As part of the registration process, all participants complete a health history questionnaire and informed consent. Client fitness ranges from recreational athletes trying to improve their performance to those with limited experience with physical activity and have some physical limitations. The American College of Sports Medicine's (ACSM) pre-participation health screening is used and a physician's approval may be required; a few participants' health complications have been too significant for this student population to work with (11).

A student manual with policies, procedures, initial exercise guidelines, and helpful hints has been developed and is revised as needed. A well-rounded program is provided, and students can tailor it to help the client meet their health/fitness goals. Students are expected to keep records for the client and to provide external motivation and accountability to ensure that the client attends the majority of training sessions. Student trainers also assist their participant in measuring/monitoring progress and Fitness Challenge criteria. Participant data used to assess progress is collected at the beginning, in the middle, and at the end of the Challenge are found in table 3. Relative change in each parameter is calculated at the conclusion of the Challenge and all are summed to determine participant progress.

Table 3. Fitness Challenge participant fitness data.

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| <ul style="list-style-type: none"> • Height • Weight • Body mass index (BMI) • Percent body fat (determined by BIA) • Resting heart rate • Resting blood pressure • Appropriate performance measures based on participant goals (e.g. speed, power, strength) |
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A participant manual is in development as we have discovered a need to communicate more effectively about the program, what participants can expect, and what their responsibilities are. This will contain learning outcomes, policies, procedures, and expectations. It will be used to help clients understand that they are working with novices and to encourage them to be the best clients that they can be as well as find ways to help students connect the experience to course content.

Assessment of this experience is via reflections, participant feedback, supervisor evaluation, and group discussions as well

as a summary statement of the experience. Twenty contact hours per semester are required and the Fitness Challenge accounts for 15% of the students' grade. Students reflect on their experience four times across the ten weeks: after initially meeting their clients, at weeks four and eight, and at the conclusion of the Challenge. The prompts encourage them to think about their experience, their clients, professionalism, and the connection to course concepts (table 4) (4).

Students are reminded from the beginning that 1) they are to be professionals at all times, 2) all client data and conversations are confidential and only shared with the client, the course instructor, and course graduate assistants, 3) they are to remain within their scope of practice, 4) all exercise routines are evidence-based, and 5) there is a dress code including the provided Training in Trainer t-shirt. The first training session is dedicated to 1) reviewing the health history and informed consent, 2) discussing client goals, 3) collecting baseline data, and 4) starting with the prescribed routine targeting major muscle groups in multi-joint movements. Cardiorespiratory training during gym hours is generally discouraged and clients are encouraged to add this to their physical activity outside of the weight room. It is outside of our scope of practice to provide dietary assessments and specific nutritional advice, but general evidence-based recommendations are included.

Table 4. Fitness Challenge reflection prompts

Reflection Activity #1

Address the following:

- What are your expectations, learning goals, hesitations, things you are looking forward to?
- How could training in the Fitness Challenge help you understand the course information?
- Write a one (1) page description of the client with whom you are working (in other words, a very brief needs analysis).

Reflection activity #2 (4)

Check-in with hours completed

Describe your experience objectively:

- What?
- When?
- Where?
- Who?
- Why?

Define Professionalism (look it up from a reliable source, do not just make up a definition).

- Now, in your own words, what is professionalism?
- How has this service-learning experience made you aware of professionalism?
- In what ways do you demonstrate your professionalism?
- In what ways do you demonstrate your lack of professionalism?
- What can you do to improve your professionalism as you continue to pursue this service-learning opportunity?

Reflection activity #3:

Check-in with:

- Hours completed
- Two highlights
- Two challenges, proposed solutions to challenges.

Now that you have some experience helping others achieve their health/fitness goals, what are some personal qualities or characteristics that are helpful when coaching/training/teaching movement?

What personal qualities (e.g. leadership, communication skills, compassion, etc.) have you developed through training in the Fitness Challenge? How will these qualities help you in the future?

Final reflection activity #4/Wrap-up (4)

Describe your experience objectively:

- What?
- When?
- Where?
- Who?
- Why?

Examine your experience:

- What course concepts applied to this experience?
- How was your experience the same as what has been discussed in class?
- How was your experience different than what has been discussed in class?
- What concepts do you need to rethink? How?

Articulate Learning:

- What have you learned?
- How did you learn it?
- Why is it important?
- What will you do because of it?

Students are sent Fitness Challenge emails every-other-week (odd weeks) to share information, remind them of needs, and provide general feedback. There are brief conversations in class in the other weeks and more in-depth discussions during the first couple of weeks as students get used to the process and Challenge. Clients are emailed every fourth week to share information, encourage continued participation, and to provide prompts for discussions with students. They are then asked to complete an evaluation of their trainer and provide feedback about the Challenge in general at the conclusion of the 10 weeks.

As has been experienced elsewhere, the initial student response to being a trainer in the Fitness Challenge is resistance. High impact practices are resisted because of the time commitment and interference with social and work interests (13). However, by the end of the semester, the majority of students indicate that this was their most significant learning experience.

Participation and Outcomes

No formal evaluation of the Fitness Challenge has been undertaken. Two hundred seventy nine students have served as Fitness Challenge student trainers. There have been 493 participant slots filled over the four years of the Fitness Challenge; however, there have been 330 discreet participants as 163 individuals have participated in two or more Challenges. Table 5 indicates the total number of Fitness Challenge participants and the number of terms that some participants have repeated. As mentioned previously, participants are asked to donate a minimum \$30 registration fee to the Kinesiology department scholarship fund and the School of Allied Health Sciences matches these donations

– some participants choose not to donate and others choose to donate in excess of \$30.00. \$26,440.00 (an average of \$33.05 per participant before matching) has been added to the scholarship fund over the three years of collecting donations. Table 5.

Table 5. Number of Fitness Challenge participants and the number of terms (Challenges) in which they have participated.

# of terms participating	# of Participants
1	167
2	51
3	47
4	41
5	16
6	5
7	3
8	0
Total	330

The Fitness Challenge is advertised as a friendly competition between employees. Before and after data for height, weight, body mass index (BMI), % body fat, resting heart rate, blood pressure, and goal appropriate tests is calculated. Percent change is calculated by subtracting the final measurement from the initial measurement and dividing by the initial measurement to get a percent change. For those changes for which an increase is generally considered positive (i.e. strength), the sign is switched. The total percent changes across all categories is then added. With a maximum of 620% change and a minimum of -59%, the mean change is $115 \pm 143\%$. The majority of participants experience success, but about 16% have not.

In regard to achieving learning outcomes, as previously stated no formal evaluation of the Fitness Challenge has been undertaken. However, success is evident by the comments from the students and participants. The comments here are unsolicited from anonymous student course evaluations and anonymous solicited comments from participant end-of-Challenge surveys. Comments from students:

The service learning was actually my favorite part of the class because I feel like I have gotten the most out of it compared to the lecture and lab; the hands on experience that it provides the student is unmatched and getting to work with real people can prepare the students for working in a professional career in the future. I also think the idea of having a supervisor was a smart move too because most of us aren't trained in the correct way to train clients; my supervisor was constantly correcting me and making helpful suggestions for future programs. This did a great job at expanding my knowledge about the field of personal training, which is something that I would like to learn even more about in the future.

I like being the person that holds another person accountable when it comes to exercising. Being the reason why someone shows up to exercise is something that I do not have a lot of experience in. I also like sharing the information that I have learned with someone who is interested in learning more about exercise.

I am able to take what I have learned in book and apply it to real life. The most beneficial part of this class!

This was something I wasn't very comfortable with at the beginning because I have never trained someone in the weight room. I like that it pushed me outside of my bubble. It has allowed me to come up with different ways to train my clients that I would not normally think about.

I like that it helps me apply what we have been learning in class and gives us some experience of what it is like to be a personal trainer and have someone depend on us. It helps boost confidence when you are doing something right and can physically see the improvements. It also helps teach good interpersonal communication skills that our generation, for the most part lacks.

One of the best highlights of this experience happened when I told one of my clients that we only had two weeks left. He surprisingly was very sad and told me that he wished this went longer because our sessions are the highlight of his week. This was very surprising to me and so heartwarming. I loved hearing this because this means that no matter the outcome, I improved his life in some way.

It is very rewarding to get text messages about what my client has done. She climbed a mountain (and sent pics from the top), she zipped up her snow pants for the first time in years, and she's lost weight and reduced her body fat percentage by over 5%. It's been great!

These qualities will help me in my coaching because I see I have been doing some things the wrong way and I want to turn that around . . .

Compared to the first week of the challenge, I felt lost and unprepared on what to do. I have learned a lot from the first week.

It is my favorite part of the course. It has helped me when writing my conditioning program, allowed me to understand and express professionalism and to be able to apply previously learned Kines class content.

The one thing that I dislike about service-learning is the demand that it places on me. On top of coming up with exercises and future session plans for the individual, I also have to leave much earlier than usual to arrive at the sessions. Fortunately, it has become easier to get up in the morning and leave than it has been at the beginning of the semester.

The time commitment on top of everything else this semester is a little overwhelming.

Comments from participants

I worked hard and saw real results. I learned that I could do things that I did not think I could. I am thrilled.

All of it. It was hard getting up and being there at 7:00 a.m. but I started to enjoy it and look forward to it as we continued.

I liked working with the student and getting to watch them be more confident and learn with them. They can share what they are learning in class with you.

He'd talk about things he was learning in his class and try out different strategies on me based on what my goals were. I enjoyed being a part of the learning process for him and myself. Also just having a physical trainer for the first time in my life was awesome.

Interacting with a student trainer. I teach. I like to see the students make progress and I like to see them act like professionals as they get ready to leave Boise State.

This is a great opportunity to interact with students and help them with their educational experience – take advantage of the

chance to improve your fitness and help them. However, if you sign up – show up. This is something on which they are being graded and learning . . . please don't slight them on the experience. Obviously, there are times you won't be able to make it, but communicate with them, don't just not attend a session.

We are in this together, both learning from each other, so BE PATIENT!

Be patient and enthusiastic and remember that you are working with a student who is learning and trying. Be clear with your goals and abilities, but also be open to trying activities.

My student trainer didn't know exactly what to do the first week I was with her. She even admitted to me she didn't know what she was doing, which is not the way to start out. But I was pretty lenient, knowing that I was her first guinea pig and she had to start somewhere. But, once she got past the first week, she found her footing and all our training went well after that.

Conclusion

The Conditioning Procedures Fitness Challenge is providing students with a valuable experiential learning opportunity while helping university staff increase or maintain their physical activity. Department scholarship funding is increasing as is the positive visibility of the Kinesiology department on campus. The two biggest challenges are to get some participants to maintain their commitment and for some students to find the time to participate. We have also not found the optimum scheduling/matching solution and find the process unwieldy at this point – something we are continuing to develop. When considering all the pros and cons, we come out way ahead in the positive column and will continue to improve and offer the Fitness Challenge. Beyond those challenges mentioned, in the future, we will formalize a process for data collection, obtain Institutional Review Board approval, and study the effectiveness and short- and long-term impact of the Fitness Challenge for both the students and the participants.

Practical Application

While the Fitness Challenge does require considerable logistical and educational support, the value far exceeds the cost. This is a worthwhile experiential learning opportunity that programs can implement to increase student learning and department exposure while improving campus health and fitness.

Acknowledgements

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