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BODYPUMP and THE REP EFFECT: An Instructor's Evaluation Of The Low-Weight, High-Repetition Group Exercise Program

Meredith Pritchett

University of South Carolina - Columbia

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BODYPUMP AND THE REP EFFECT: AN INSTRUCTOR'S EVALUATION OF THE LOW-
WEIGHT, HIGH-REPETITION GROUP EXERCISE PROGRAM

By

Meredith Pritchett

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of the Requirements for
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Approved:

Charles Anderson

Director of Thesis

Michelle Borkey

Second Reader

Steve Lynn, Dean

For South Carolina Honors College

Table of Contents

I.	Summary.....	3
II.	What is Bodypump?.....	5
III.	My Bodypump Experience.....	10
IV.	The Science Behind the Workout.....	17
V.	BODYPUMP at USC.....	24
VI.	References.....	27

Summary

My senior thesis project was to become a certified Les Mills BODYPUMP instructor. In order to obtain my certification I had to go through training, which was paid for by the University of South Carolina. Training was a mentally and physically demanding weekend full of lifting weights and learning everything there is to know about BODYPUMP techniques, choreography, and coaching. Afterwards, I had sixty days to send in a video of myself teaching the class to a group of participants in order for my teaching skills to be evaluated by Les Mills. I passed my evaluation and am now a certified instructor.

I have been teaching the group exercise class every week for two full semesters now at the Strom Thurmond Wellness and Fitness Center. It has been a truly enriching experience. I have gained communication skills, become better at motivating others, as well as improved my own physical fitness. The BODYPUMP workout is a challenging hour-long routine of barbell-based exercises. The group atmosphere creates a sense of unity and is one of the biggest factors that make participants want to push their limits and work hard during the class.

BODYPUMP was created as a muscular endurance workout based on scientific research. As a supplement to becoming an instructor I decided to take an in depth look at the ways that BODYPUMP is supported by physiological and psychological evidence. I looked at numerous studies on resistance training and specifically on BODYPUMP participants. Overall, my findings were in support of the benefits of this training program. Through doing all of this research I was able to gain a more complete

understanding of BODYPUMP, which has been beneficial for my development as an instructor.

What Is BODYPUMP?

BODYPUMP is one of the many classes designed by the New Zealand based company, Les Mills. Other classes include BODYBALANCE, BODYCOMBAT, BODYJAM, BODYATTACK, BODYSTEP, BODYVIVE, RPM, SH'BAM, CXWORX, and the GRIT series. The classes are offered in over 15,000 clubs and gyms across over 80 different countries, and taught by approximately 100,000 certified instructors (Les Mills, 2013).

One of the main ideas behind the Les Mills programs is that participants are not just exercising; they are joining something bigger than themselves. The Les Mills mission is to “create a fitter planet” and the invitation is open to participants to join in achieving this goal. The culture of the organization, much like the culture of New Zealand, celebrates inspiration, energy and good health and prides itself on bravery. Those that are part of the Les Mills organization call themselves “One Tribe”, which means that they are all working towards the same goal to make the world a fitter planet. They consider themselves united by their bravery, motivation and passion about the future of fitness. The Les Mills Tribe are fitness warriors and have even created their own powerful warrior-call based on a traditional Maori haka, a native tribal war dance from the indigenous New Zealand Maori people, often performed at ceremonies and as a welcome, challenge, or celebration (Les Mills, 2013). The Les Mills haka was created by New Zealand’s leading Kapa Haka specialist and it holds a clear, compelling message about One Tribe working together to overcome obesity and sedentary lifestyles.

Tu Mai Nei Nga Toa E©

Kaitataki: Kia wiri
 Hope
 Ki raro
 A kia mau Hi
 Kia whakata hoki au i ahau
 Hi Aue Hi
 E nga matua tipuna
 tukua mai te kaha
 te rangatiratanga e

Kapa: Tu mai nei nga toa e

Haka ana ki te noho mangere
 Ko te whakaara ko te
 momona
 Me pakanga, parekura e
 Kia pakari hinengaro, tinana,
 wairua.
 Ko te ha o tane e

Kaitataki: I te wehenga ka
 puta hihiri e

Kapa: Na reira, me puta to
 ihi e
 Kia tu te wana
 Kia tu te wero aue
 Kia tu kotahi tatou
 Ana, Ana, Ana,
 Tenei whakatau. Hi.

Les Mills Haka

Leader: Let your hands quiver by your side
 Hands on hips,
 Hands down by your side (still)
 Be steadfast
 Let me be at one with the earth
 Hi aue hi
 Ancient ancestors/warriors of old
 bestow upon us strength and leadership

Group: Standing here are the new warriors
 We haka in fury at sedentary lifestyles
 Obesity is our adversary

Let us do battle

Let your mind, body and spiritual essence be revitalised
 Through the breath of life

Leader: At the separation of earth from sky, all potential
 was released into this world

Group: Therefore, let your true potential be known
 Reveal your inner strength & power
 Hold fast to the challenge
 Let us unite as one global entity
 Yes it is , Yes it is, Yes it is
 This we decree.

The history of the company dates back to 1968 when the Mills family opened their first gym in Auckland, New Zealand. BODYPUMP was created in 1990 under the original name of “Pump”. In 1997 it was renamed and showcased globally by some of the first International Master Trainers including Emma Barry, Steven Renata, Pete Manuel, Cathy Spencer, and Mike McSweeney. Over the last ten years, Les Mills has conducted extensive independent research into the physiological benefits of BODYPUMP. This research has confirmed that BODYPUMP has strong calorie and fat-burning benefits and it improves aerobic fitness, muscular strength, and muscular

endurance. There is also evidence to show that BODYPUMP classes can have positive psychological benefits.

BODYPUMP is a barbell class that claims to sculpt, tone, and strengthen one's entire body. A typical class is about an hour long and has ten tracks, or songs, each devoted to either warm-up, squats, chest, back/hamstrings, triceps, biceps, lunges, shoulders, core, or cool-down. 70-100 repetitions are performed per body part, totaling up to 800 repetitions in a single workout. This low-weight, high-repetition design is the key to improving muscular endurance and is referred to by Les Mills as THE REP EFFECT. THE REP EFFECT is a breakthrough in resistance workout training that has been shown to help participants burn fat, gain strength, and quickly produce lean body muscle conditioning (Les Mills, 2013). The goal is to exhaust one's muscles with light to moderate weights by performing high repetitions in a single workout. Compared to a standard gym workout, BODYPUMP has participants perform more than four times the reps that an average person would achieve alone in the weight room.

A new set of BODYPUMP choreography is released every three months with new instructor education supported by the latest research, fresh routines, and chart-topping music to appeal to participants. Each track has several different exercises that work its designated muscle group. During the squat track, participants are instructed to perform squats in mid-stance and wide-stance and to move at different tempos. The chest track may include chest press, chest fly, or A-press. The back track has exercises such as dead lift, dead row, wide row, hang clean, and clean & press. Triceps exercises include triceps extension or press with the bar, triceps pushups, dips, or overhead extensions with a plate. Biceps exercises include rows, curls with the bar, and hammer curls with plates. The

lunge track may include weighted lunges with the bar or plates, lunges involving stepping up on the bench or jumping in the air, or other plyometric exercises aimed at getting one's heart rate up. Shoulder exercises include pushups, side raises, rear-deltoid raises, rotator raises, MAC raises, shoulder presses, and upright rows. The core track may include abdominal exercises such as planks or hover variations, crunches, alternating leg extensions, bicycle crunches, or hip raises. The last track is the cool down, which is a complete stretching of all the muscles used during the workout.

The following is a testimonial from a BODYPUMP participant:

“In January of 2007 I had a physical. I already knew I had type two diabetes and was getting it under control, but I was told my blood pressure was high - 150 over 90 - and my cholesterol was 450. I weighed 245 lbs and my waist was 38 inches. That was it - I had had enough. I wasn't going to take any medication so I joined Gold's Gym in Vestavia, Alabama in March 2007. I started out doing some weights and cardio. One morning in June I saw a BODYPUMP class and thought, "that has got to hurt". On June 6, 2007 I walked into my first Les Mills class - BODYPUMP. I have never been so sore in my life as I was the next day. Brushing my teeth was incredibly painful, but I was back in class the following week. After only four weeks I noticed all my clothes were starting to get very loose. I had lost almost 20 lbs. I just had another physical and all my blood work is back to normal. My doctor was shocked. The Les Mills programs truly are the fastest way to lose weight and get into the best shape of your life. My teenage boys cannot keep up with me and I can do things now that I have not done since I was in my teens and early twenties. I feel great, my production at work has increased and I no longer suffer from mood swings. I am now down to 185 lbs, have lost over 18 inches of fat, and

am starting to get a six-pack. I love hearing "Have you been working out?" "Man you have lost so much weight". I have now completed my BODYPUMP training and want to help others achieve their fitness goals. I guess I can say the Les Mills programs have not only changed my life, but saved my life. Thank you to all my awesome instructors, and to Les Mills - Kia Kaha and never surrender." (Les Mills, 2013)

My BODYPUMP Experience

My senior thesis project was to become a certified Les Mills BODYPUMP instructor. In order to complete this process you have to be associated with a club that has an active license in the program. The University of South Carolina's Strom Thurmond Wellness and Fitness Center has a license for BODYPUMP and actually hosted a training weekend August 16-17, 2013, so I was able to participate. Initial training normally costs \$290, but fortunately, the University was able to cover my training fee.

I had been taking BODYPUMP classes for a year before I went through training so I thought I was pretty familiar with the program. It did not take long for me to realize that Les Mills programs are much more in depth than I had ever imagined. The training weekend lasted two full days and was taught by a Master Trainer. We worked ourselves to physical exhaustion, taking four full length BODYPUMP classes as well as completing the BODYPUMP Challenge. We also spent time covering the five key elements of training – choreography, technique, coaching, connecting, and fitness magic.

Les Mills classes are completely pre-choreographed. Instructors receive new choreography four times a year and are expected to quickly learn and keep up with the constantly changing material. In my training, we focused on the choreography from the BODYPUMP 86 Release. Each trainee was assigned two tracks to learn before initial training, and we were required to teach these specific tracks to the rest of the group during the weekend. Memorizing and knowing the choreography means knowing which movements to do, when to do them, and the pace at which they are to be performed. In

the squat track for example, 4/4 represents the slowest squat and lasts for 2 eight-counts. 2/2 is twice as fast, lasting for one eight-count. 1/1 is referred to as “singles” and each rep lasts half an eight-count. Other tempos include 3/1, 1/3, 1/1/2, and “bottom halves” or “top halves”. As an instructor you are expected to memorize these details for every track in a given release.

In training we also focused on perfecting our own technique for each of the movements in the release. The Master Trainer went over correct form for each exercise and then made sure that we were all performing them correctly. It is important for the instructor to have perfect form because the participants will usually copy what they see the instructor doing. Below are some examples of technique requirements for different exercises:

Squat

- Mid-Stance: feet slightly wider than hips, toes out
- Wide Stance: I heel-toe wider, toes out
- Sit down and back with the butt; butt stops just above knee line
- Knees in line with middle toes and track forward no further than toe line

Chest Press

- Target zone- middle of chest, hands wide on the bar
- Top of ROM: elbows are soft and align with the shoulders
- Bottom of ROM: elbows alight w/ mid-chest & are no lower than bench-top

Dealdlift/Deadrow/Widerow

- Tip from the hip with a neutral spine; slight knee bend
- Bar slides down thighs, no lower than bottom of kneecap
- (Row): Bar rows to belly button – elbows in
- (Wide Row): Bar rows to lower ribs – elbows high and wide

Clean & Press/Power Press

- Upright Row the bar, leading with the elbows
- Drop under the bar, bending the knees (catch bar in front of collar bone)
- Press to the top
- Bend knees and catch, return to Set Position; bar close to body all the way

Triceps Variation

- Upper arm fixed; elbows stay in/narrow
- (Supine): bar towards forehead; elbows point up; hands shoulder width
- (Upright): lower plate down; elbows face forward
- (Kickback): extend elbow & return to start (forearm approx. vertical)
- (Press): bar aims toward lower ribs, elbows to 90 degrees at bottom
- (Dips): drop butt down past & close to bench-top; elbows towards the rear

Bicep Curl

- ROM – bar to just in front of shoulders, and all the way to thighs
- Elbows under shoulders & pointing down throughout

Lunge

- 90/90 stride length, feet stay hip-width apart
- Back knee moves towards the floor, front knee above ankle
- Knees in line with middle toes; hips & shoulders square

Shoulder Variation

- Lead w/ the elbows, wrists strong; ROM to just below shoulder height
- (Side Raise): elbows at 90 degrees or slightly greater
- (Real Deltoid Raise): body leans on a 45 degree angle; lift elbows vertically
- (Mac Raise): small twist from upper body; keep hips facing forward
- (Overhead Press): ROM from chin towards ceiling; slightly forward of head
- (Pushup): hands outside shoulders; bring shoulders/chest to elbow level

Choreography and Technique together make up Layer 1, or Compulsory Cues. Layer 1 includes an introduction to each track, telling participants which muscle group is going to be worked, what their weight selection should be, the track focus, and a demonstration of new or complicated moves. For cueing choreography, we follow “NETT” – telling participants the Name of the Exercise, Tempo, and Target. Technique cues are used to set up effective execution of each movement.

Layer 2 is where “coaching” comes into play. Follow-up cues are given in order to coach participants how to move better and to correct their form. We were also taught how to coach to intensify the workout, or to tell people how to move to deliver better results. An example of this is during Wide Rows we tell participants to focus on squeezing their shoulder blades together to feel that “pinch” in the middle of their upper back.

The last two key elements are connection and fitness magic. These make up Layer 3, which often becomes more natural after an instructor has been teaching for a while. Layer 3 is what brings the BODYPUMP experience alive. Everything from eye contact to the tone and volume of your voice can be used to change the experience of the class for participants. This third layer of coaching is what made taking a class taught by the master trainer so different from taking a class taught by a new instructor. Bringing passion and personality into your teaching can make an ordinary class seem exciting and inspiring to a participant. During training I made it one of my goals to one day be able to have this “fitness magic” that the more experienced instructors have.

My favorite part of training was the BODYPUMP Challenge because of my competitive nature. The challenge started off with us running one mile as a group, and then returning to the studio for some heavy lifting. We were given different exercises that are typically used in BODYPUMP, but we were told to use the heaviest weight we could possibly use to complete the exercises. We worked with partners, each taking turns spotting the other as we lifted. It was very hard work, but so much fun because of the competitive environment. I was constantly looking around at the other trainees and then adjusting my weight selections to make sure that I was lifting heavier than anyone else.

At the end of the training weekend we were each assessed by the trainer in order to determine whether or not we had passed initial training. I passed with a 3/3 so my next requirement was to submit a video of myself teaching a full length BODYPUMP class to participants in order for it to be assessed by the Les Mills team. We were given 60 days to submit the video, so I submitted mine in October. During the time in between training and submitting my video, I team-taught the class weekly at the Strom Thurmond

Wellness and Fitness Center with another instructor. A few days after submitting my video I received the news that I had passed and was now officially a certified BODYPUMP instructor. Les Mills gave me very descriptive feedback from my video assessment that has been helpful for me in improving and becoming a better instructor. Below is what they had to say about my video:

Outcome: PASS

Comments: “Congratulations on completing your BODYPUMP certification, Meredith! You did a fantastic job learning your CHOREOGRAPHY and showed knowledge and passion for the program. You used role model weight and stand in the essence of BODYPUMP with your strength. Awesome! See the comments under the Key Elements below for more information. You are off to a great start, Meredith, and we are glad to have you as part of the Tribe. Kia Kaha!”

TECHNIQUE: PASS “Meredith you have done a great job learning the proper TECHNIQUE for BODYPUMP. You have strong weight selections and EXECUTE the movements with control and great Range of Motion. Way to go! As you work on polishing up your TECHNIQUE and becoming an even better role model, focus on your Set POSITION. Feet should be directly under the hips. You tended to go wider than the hips. This will set you up for better movement, as well as your participants, since they learn by following us. Don’t be scared to practice with a little heavier weight, as it looks like you can handle it in some of the tracks (Back Track). This will help give you the

correct FEEL of the movement. A heavier weight will not allow you to reverse curl the bar, so that may be your solution!”

CHOREOGRAPHY/WORKOUT: PASS “You nailed the CHOREOGRAPHY! This is important, as it allowed you to focus on the other Key Elements. Keep learning your CHOREOGRAPHY 100% so you can continue to develop the other Key Elements.”

COACHING: PASS “You have a good grasp on the COACHING Model. You got your participants set up with great track introductions. You were personable and showed excitement. Awesome! Once you started moving, you seemed a little nervous, and got quiet. You knew what cues needed to be said to get your participants moving safely and effectively. This allowed you to lead a safe and effective class. Use your Voice as a COACHING tool. Put a little more contrast behind your voice to give your COACHING more power. Use the five BODYPUMP voices. Use a conversational voice in the low parts of the music, like the verses. Build your voice to create anticipation and excitement in the pre-chorus. Use a big voice to create power and motivate into the chorus. Use an intense voice for the really challenging moves, like the singles or bottom-halves. Finally, use silence and find opportunities to just let the music speak. You can do this, Meredith, and it will probably be much easier without the camera on you!”

CONNECTION: PASS “As mentioned above, you have a fun and enthusiastic personality that showed before class and between tracks; now bring that out as you teach! As much as we want BODYPUMP to be safe and effective, it is also allowed to be fun!

☺”

The Science behind the Workout

BODYPUMP is a high-repetition resistance training program choreographed by the Les Mills BODYPUMP team. The potential benefits of this type of training, including calorie and fat burning benefits, improved aerobic fitness, muscular strength gains, improved muscular endurance capabilities, and positive psychological benefits, have been researched by independent research teams contracted by Les Mills International. The BODYPUMP team has used the information gained from these research studies to guide further development and to improve the efficacy of the BODYPUMP program.

Calorie and fat burning benefits are as follows: It is estimated that an average of 483.1 (males) and 338.9 (females) calories can be burned during a BODYPUMP session. This equates to 8.4 (males) and 5.9 (females) calories per minute. The maximum number of calories burned has been shown to be 424 (female) and 603 (male) (Pfitzinger, 1999). An additional 10% of calories have been shown to be burned after the cessation of a BODYPUMP session due to Excess Post-Exercise Oxygen Consumption (EPOC) (Lythe J. , 2001). It has been estimated that 88.6 calories of fat in males and 51.5 calories of fat in females, and 394.4 calories of carbohydrate in males and 287.4 calories of carbohydrate in females, are consumed during a typical BODYPUMP session. This equates to 18.6% fat and 81.4% carbohydrate in males and 14.9% fat and 85.1% carbohydrate in females. Significant reductions in skinfold measurements (23.7 mm in males and 33.8 mm in females) and percent body fat (2.9% in males and 2.6% in females) have been observed over a 13-week BODYPUMP training period during a study at the University of Auckland in New Zealand where no other training activity or change

in diet was undertaken (Lythe J. P., 2000). The study was done on healthy adults who were familiar with the BODYPUMP program.

Aerobic fitness improvements can be assessed by measuring oxygen consumption and heart rate. During a BODYPUMP session the mean oxygen consumption has been shown to be 21.5 ml/kg/min for males and 19.0 ml/kg/min for females, with an average intensity of 41.6% VO₂ max for males and 39.8% VO₂ max for females observed. According to studies, males spent an average of 11.6 minutes and 3.2 minutes, and females 8.0 minutes and 0.6 minutes, above 50% VO₂ max and 70% VO₂ max, respectively, during the same BODYPUMP session. The average heart rate during a BODYPUMP session had been shown to reach 138.2 beats per minute (males) and 132.6 beats per minute (females). Males spend an average of 37.4 minutes and females 40.2 minutes above 70% of maximum heart rate during a BODYPUMP session. (Pfitzinger, 1999).

Increases in upper body strength, using the 6RM Bench Press as a measure, were 6.0 kg in males and 4.7 kg in females over a 13-week BODYPUMP training period where no other training activity or change in diet was undertaken. Lower body strength, using the 6RM Leg Press as a measure, increased by 9.4 kg in males and 20.0 kg in females. These strength measures continued to improve with an additional 5 weeks of BODYPUMP training (Lythe J. P., 2000). In regards to muscular endurance capabilities, upper body increases as measured using the 70% 6RM Bench Press were 4.3 kg in males and 5.5 kg in females. Lower body muscle endurance capabilities increased by 9.4 kg in males and 20.0 kg in females, as measured by the 70% 6RM Leg Press (Ho, 2000).

A primary goal of BODYPUMP, like any other weight-loss program, is to help participants lose fat weight rather than total body weight. To lose fat, an individual's energy expenditure must exceed his energy intake. The variables that influence energy expenditure include resting metabolic rate (RMR), the thermic effect of food (TEF), and the thermic effect of physical activity (TEPA) (Melby, 1999). Exercise increases total daily energy expenditure, leading to loss of fat mass (FM), while maintaining or increasing fat-free mass (FFM). It takes 3500 kcal to burn one pound of fat. By increasing total daily expenditure, exercise can lead to a negative caloric energy balance. Low-intensity exercise as opposed to high-intensity exercise is prescribed by many practitioners as an effective way to lose fat mass because fat is the main fuel source for low-intensity exercise. Studies have shown however that although low-intensity exercise uses predominantly fat as a fuel source, the total amount of energy derived from fat may be greater during moderate to high-intensity exercise (Puhl, 1992). In addition, it is the balance between the total calories consumed and used, not the source of the calories used, that determines whether a person actually loses weight (Puhl, 1992). So although during a BODYPUMP session one may be using more carbohydrates than fats as fuel, his energy expenditure is higher than it would be during a low intensity exercise that uses more fats.

Caloric expenditure and fuel source, as well as information on blood lactate levels and VO₂ can be measured using gas analysis. Caloric expenditure during exercise can be calculated by measuring the volume of inspired or expired air and the concentrations of oxygen and carbon dioxide in expired air. The respiratory exchange ratio (RER) is the ratio of the volume of CO₂ produced to O₂ consumed by the body per minute (Fox,

1993). RER ranges from 0.7 if fat provides 100% of the energy utilized to 1.0 if carbohydrate provides 100% of energy for exercise (Peronnet, 2001). During low intensity exercise, mostly fat oxidation is occurring, therefore the RER is closer to 0.7. A subject that exercises at a higher intensity uses mostly CHO as energy, which is associated with a higher RER value. Lactate accumulates in the blood and muscles during high-intensity exercise. Lactate is subsequently either oxidized or converted to glycogen. If lactate returns to resting levels before the cessation of exercise, then gas analysis reflects caloric expenditure because glucose is converted to lactate and eventually oxidized (Frayn, 2003). If lactate levels remain elevated upon the cessation of exercise, however, the measurement of caloric expenditure using gas analysis may underestimate the total energy expended. Studies have shown that the rate of fat oxidation is highest during moderate activity (approximately 65% of VO₂ max) (Hawley, 1998). There are several reasons why there is a shift from fat oxidation to CHO oxidation as exercise intensity increases, including the presence of intramuscular triglycerides, circulating catecholamines, lower ATP production from fat per unit of time, and the gradient of fatty acids between blood and muscle. As exercise intensity increases from low to moderate, it is likely that the total fat oxidation increases because intramuscular triglycerides provide additional fatty acids (Martin, 2007). The shift from fat to carbohydrate as exercise intensity increases is necessary for high-intensity exercise to occur because ATP is produced at a faster rate when CHO is metabolized compared to fat (Hawley, 1998). The body needs approximately 15% more oxygen for the production of a given quantity of ATP from fat, compared to carbohydrate. In addition, as exercise intensity increases there are limitations in the movement of fatty acids from blood to

mitochondria, which limits the amount of fat oxidation during high-intensity exercise (Hawley, 1998).

The effectiveness of an exercise training program in reducing body fat and improving the various components of fitness is determined by the frequency, intensity, duration, and type of exercise. The most widely followed guidelines for health and fitness are issued by the American College of Sports Medicine (ACSM). ACSM's standard for the quantity and quality of training for developing and maintaining aerobic fitness, body composition, and muscular strength and endurance in healthy adults includes the following recommendations:

Frequency of training: at least 150 minutes per week, spread out through all or most days of the week

Intensity of training: 60-90% of maximum heart rate or 50-85% of maximum oxygen uptake

Duration of training: 20-60 minutes of continuous aerobic activity

Mode of activity: Any activity that uses large muscle groups, can be maintained continuously, and is rhythmic and aerobic in nature

Resistance training: Strength training of moderate intensity, sufficient to develop and maintain fat-free weight should be an integral part of an adult fitness program. Adults should train each major muscle group two or three days each week using a variety of exercises. For each exercise, 8-12 repetitions improve strength and power, and 15-20 repetitions improve muscular endurance (ACSM, 2011).

Studies have shown that subjects work at an average of 74.2% of maximum heart rate and 40.7% of maximum aerobic capacity during a BODYPUMP session. Although the average heart rate during BODYPUMP is high enough to meet the ACSM recommendations for developing and maintaining aerobic fitness, the oxygen consumption is not. Heart rate during BODYPUMP is elevated disproportionately to oxygen consumption due to the pressure effect that occurs during weight-training exercises (Pfitzinger, 1999). For any given level of oxygen consumption, heart rate is typically 20% higher for upper body exercise than for lower body exercise such as cycling. These results in regards to aerobic intensity indicate that a BODYPUMP class provides a low to moderate stimulus to increase aerobic fitness. The implication of these results is that BODYPUMP is useful for maintaining aerobic fitness, but does not provide sufficient stimulus to improve aerobic fitness in already fit subjects. For subjects like these, two to three days per week of higher-intensity aerobic-based exercise would be necessary to improve aerobic fitness. For more sedentary populations, such as middle-aged individuals without a history of aerobic training, BODYPUMP would be likely to provide a considerably higher relative aerobic demand, which would be sufficient to improve aerobic fitness.

High levels of enjoyment, an improved overall feeling of well-being, improvements in the performance of other sports and exercise activities, a sense of improved coordination, flexibility, muscle strength and tone have been reported by participants (Nielson, 1999). Positive changes in psychological scores have been observed in males and females following the 13-week BODYPUMP training period at the University of Auckland where no other training activity or change in diet was undertaken

(Ho, 2000). A study was done to examine the opinions and attitudes towards the BODYPUMP workout amongst regular attendees, or those who have been going to BODYPUMP classes twice a week or more for at least three months. Participants were very positive about their enjoyment of the BODYPUMP classes. At least 90% agreed that the routines are easy to follow (97%), the BODYPUMP classes provide a challenging workout (93%), and the instructors are friendly and helpful (90%). In addition, over 70% agreed that BODYPUMP classes are fun (89%), BODYPUMP classes improve their performance in other sports and exercise activities (72%), and BODYPUMP classes have improved their overall feeling of well-being (86%). Even amongst statements with less than 90% agreement, the level of disagreement was very low. People who didn't agree with a statement preferred to say they neither agreed nor disagreed (Nielson, 1999).

BODYPUMP at USC

Although it would be interesting to study the fitness changes happening in students in my own BODYPUMP classes, I do not have those kinds of resources. I did, however, create a survey to find out what participants at the University of South Carolina think about BODYPUMP. The survey was ten questions long and was taken by fifty USC students who have taken at least one BODYPUMP class at the Strom Thurmond Wellness and Fitness Center before. Of those 50, 10% reported that they have been taking the classes for one semester or less, 30% said they have been participating for one year, 50% said 2-4 years, and 10% said over 4 years.

Of the 50 students who took the survey, 50% reported that they attend a BODYPUMP class at least once a week or more, 10% said 1-3 times per month, and 40% said once every few months. The participants who regularly attend BODYPUMP are most likely the only ones that really reap the benefits of the program. With any resistance training program, muscular strength and endurance gains will become reversed when the training is stopped. The participants who only attend a BODYPUMP class every few months will not be able to see any direct results from the training because the time between sessions is too long. Gradually increasing the weight load lifted is an important part of gaining strength. 34% of participants reported that they have always used the same weight loads during BODYPUMP classes. All of these people belonged to the group that said they only attend a class once every few months. 66% of participants reported that they increase their weight at least once a month, and approximately half of those people increase more often. The students in this group are much more likely to experience fitness improvements than the others. I would like to see an improvement in

attendance among those who are only occasional “bodypumpers”, as well as more participants increasing their weight loads. This could be achieved by implementing more participant education and informing them of the many benefits of following the program as it was designed. For maintenance or improvement in aerobic fitness, BODYPUMP should be supplemented with additional cardiovascular exercise. All participants who took the survey reported that in addition to BODYPUMP they engage in exercises including running, elliptical, sports, cycling, yoga, zumba, and Cross-fit.

To learn more about students’ opinions of the class, they were asked what they thought of the music choices, how they felt after attending their first session, and whether or not they believed that they have experienced increases in muscular strength and endurance since they started attending classes. 8% said that the music was average, 54% said it was good, and 38% said that they love it. Not a single person reported having a dislike for the Les Mills music choices. 100% of participants reported increases in muscular strength and 96% reported increased endurance. 98% wanted to come back after attending their first class, while 2% (one person) said that they did not want to return. Participants reported feeling exhausted (50%) and sore (76%) but also energized (50%), happy (72%), and accomplished (68%). These were all good results because it shows that participants are getting an enjoyable experience as well as one that they believe is improving their fitness levels.

Another purpose of the survey was to find out how important the individual instructor is to participants and what qualities people look for in an instructor. 20% of survey participants said that they never choose which class to attend based on the instructor while 44% said that they sometimes do. 36% of participants reported that they

always choose classes based on who is teaching and that they have a favorite BODYPUMP instructor. When asked what qualities make a good instructor, most people said they like someone who is enthusiastic (100%), motivating (96%), looks in shape (86%), is knowledgeable about fitness (78%), jokes around (70%) and corrects improper form (54%). A fewer number of people said that they like an instructor who lifts heavy weight (26%), is “hardcore” (26%), and sings along with the music (34%). I think that this feedback can help me to become a better instructor.

Although I am finished with my thesis project of becoming a certified BODYPUMP instructor, the process of improving my “fitness magic” is only just beginning. As I gain more knowledge and experience I hope to one day be able to inspire others as I help them to improve their health by improving their fitness. Like the rest of the Tribe at Les Mills, I am on mission to create a fitter planet.

References

- ACSM. (2011). *ACSM Issues New Recommendations on Quantity and Quality of Exercise*. Retrieved April 8, 2014, from American College of Sports Medicine: www.acsm.org
- Fox, E. B. (1993). *The Physiological Basis for Exercise and Sport (Fifth edition)*. Madison, Wisconsin: Brown and Benchmark.
- Frayn, K. (2003). Calculation of substrate oxidation rates in vivo from gaseous exchange. *Journal of Applied Physiology* , 55(2): 628-634.
- Hawley, J. B. (1998). Strategies to enhance fat utilization during exercise. *Sports Medicine* , 241-257.
- Ho, D. L. (2000). *The physical and psychological response to 13 weeks of structured group-fitness exercise in untrained individuals*. Auckland: UniSports Centre for Sport Performance.
- Lythe, J. (2001). *Excess Post-Exercise Oxygen Consumption following BODYPUMP*. Auckland: UniSports Centre for Sport Performance, University of Auckland.
- Lythe, J. P. (2000). *The physical and psychological response to 13 weeks of structured group-fitness exercise in untrained individuals*. Auckland: UniSports Centre for Sport Performance, University of Auckland.
- Lythe, J. P. (2000). *The physical and psychological response to 18 weeks of structured group-fitness exercise in untrained individuals*. Auckland: UniSports Centre for Sport Performance.
- Martin, W. (2007). Effect of endurance training on fatty acid metabolism during whole body exercise. *Medicine and Science in Sports and Exercise* , 635-639.
- Melby, C. a. (1999). Exercise macronutrient balance and body weight regulation. *Sports Science Exchange* , SSE #72, 12.
- Les Mills (2013). *BODYPUMP*. Retrieved April 8, 2014, from Les Mills Southeast: www.lesmills.com
- Nielson, A. (1999). *An attitudinal study on the BODYPUMP workout*. Auckland: International Survey Company A. C. Nielson.
- Peronnet, F. a. (2001). Table of non-protein respiratory quotient: An update. *Canadian Journal of Sport Science* , 23-29.

Pfitzinger, P. a. (1999). *The aerobic demand and energy expenditure during BODYPUMP*. Auckland: UniSports Centre for Sport Performance, University of Auckland.

Puhl, S. &. (1992). Exercise intensity and body fat loss. *National Strength and Conditioning Association Journal* , 14(6): 16-18.