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Physiologic and Metabolic Responses to a Body Pump Workout

DIXIE STANFORTH, PHILIP R. STANFORTH, AND MARGARET P. HOEMEKE

Department of Kinesiology and Health Education, The University of Texas at Austin, Austin, Texas 78712.

ABSTRACT

Fifteen men and 15 women completed a Body Pump workout in which $\dot{V}O_2$ and heart rate (HR) were measured continuously. The workout was performed at a mean $\dot{V}O_2$ of 14.8 ml·kg^{-1}·min^{-1} (29.1% of $\dot{V}O_2$peak), HR of 123.6 b·min^{-1} (63.0% of HRmax), and caloric expenditure of 5.3 kcal·min^{-1}. Tracks using primarily the lower body had higher ($p < 0.01$) $\dot{V}O_2$, HR, kcal·min^{-1}, and weight lifted than tracks using primarily the upper body. Men had higher ($p < 0.05$) $\dot{V}O_2$, HR, percentage HRmax, total kilocalories, and kcal·kg^{-1}·min^{-1} during Body Pump than women, but there were no differences ($p > 0.05$) for $\dot{V}O_2$ in ml·kg FFM^{-1}·min^{-1} and kcal·kg FFM^{-1}·min^{-1}. Responses were below that necessary to elicit an aerobic-training effect and were lower than responses previously reported with circuit weight training.

Key Words: circuit weight training, energy cost, heart rate, oxygen uptake

Reference Data: Stanforth, D., P.R. Stanforth, and M.P. Hoemeke. Physiologic and metabolic responses to a Body Pump workout. *J. Strength Cond. Res. 14(2):144–150. 2000.*

Introduction

Body Pump is a resistance-training program using barbells with weight plates that is performed to music in a group-exercise setting. Body Pump is intended to provide a full-body workout to increase muscular strength and endurance. The workout is divided into 9 tracks of 5–7 minutes each, targeting specific body parts. Each track utilizes a variety of exercises and variations in weight load, range of motion, speed of movement, and body position to provide progressive overload. The time between tracks is used to change weight loads before immediately beginning the next segment.

There has been no published research to date on the Body Pump program. While there are no direct comparisons available in the literature, circuit weight training (CWT) is the closest in design to Body Pump. There are several differences between Body Pump and CWT, including length of the workout, number of repetitions performed, and the resistance used. A standard Body Pump workout involves 9 tracks, each isolating particular muscle groups for 5-7 minutes, over approximately 50 minutes. Each track incorporates approximately 100 repetitions for the targeted muscle group or groups. By comparison, CWT typically involves performing 1 set of 8–12 repetitions of each lift before moving to the next station. Multiple circuits of 1–3 sets generally constitute a circuit-type workout, which takes approximately 20–30 minutes to complete. Therefore, individuals lift less weight for longer periods of time during Body Pump than they do during CWT.

CWT studies have shown that the more resistance used, the higher the aerobic requirement of the circuit. Collins et al. (5) conducted a study in which subjects lifted 40, 50, 60, and 70% of their 1 repetition maximum (1RM) during a CWT workout. The $\dot{V}O_2$ ranged from a low of 18.0 ml·kg^{-1}·min^{-1} at 40% of 1RM to a high of 25.5 ml·kg^{-1}·min^{-1} at 70% of 1RM. Using multiple–muscle group exercises probably also increases the aerobic requirement of CWT. Garbutt et al. (6) reported the highest $\dot{V}O_2$ values of the CWT studies. Their protocol used primarily multiple–muscle group exercises: the squat, bench press, lateral pull-down, seated leg press, sit-up, seated row, dead lift, shoulder press, and back extension. Subjects performed 15 repetitions of the leg exercises and 10 repetitions of the arm and trunk exercises at 40% of 1RM (3 circuits with 30 seconds rest per exercise). On the basis of these studies, it is hypothesized that the aerobic requirement of the Body Pump workout will be less than during CWT.

In CWT, subjects work at a much higher percentage of maximum heart rate (HRmax) than percentage of VO_2max. Wilmore et al. (12) found that with CWT (30 seconds of work and 15 seconds of rest) that men worked at an average of 39% of $\dot{V}O_2$max while eliciting

Table 1. Subject characteristics.†

Gender	Age (y)	Height (cm)	$\dot{V}O_{2max}$ ml·kg^{-1}·min^{-1}	HRmax (b·min^{-1})	Weight (kg)	% Fat	Fat mass (kg)	Fat-free mass (kg)
Female	26.0 ± 5.5	165.9 ± 8.1*	51.0 ± 2.4	194.5 ± 7.5	60.3 ± 5.6*	21.1 ± 4.2	12.8 ± 3.2	47.5 ± 4.2*
Male	23.3 ± 3.1	174.6 ± 5.4*	51.8 ± 6.3	197.1 ± 8.4	81.8 ± 10.4*	19.0 ± 5.0	15.9 ± 5.7	66.0 ± 6.6*
Total	24.7 ± 4.3	170.3 ± 6.8	51.4 ± 4.7	195.8 ± 7.9	71.1 ± 13.7	20.1 ± 4.6	14.3 ± 4.8	56.7 ± 10.9

† Values are mean ± SD.
‡ $n = 15$ each of men and women.
* $p < 0.01$ for comparisons of men and women.

heart rates of 74% HRmax. The difference was even more striking in women, who were reported to work at 45% of $\dot{V}O_2$max and 84% of HRmax. Even though the amount of weight lifted during a Body Pump workout is less than during CWT and even though it is anticipated that the aerobic requirement of Body Pump will be less than that of CWT, it is anticipated that percentage of HRmax will be much higher than percentage of $\dot{V}O_2$max during Body Pump.

The studies of Hempel and Wells (7) and Wilmore et al. (12) have been the only CWT experiments to compare men and women. Both of these studies determined that the oxygen uptake during CWT was higher in men than in women when expressed as L·min^{-1} and ml·kg^{-1}·min^{-1}, but not when expressed as ml·kg FFM^{-1}·min^{-1}. It is anticipated that these differences and similarities between men and women will also be seen in Body Pump.

Because the physiologic and metabolic responses to a Body Pump workout have not been investigated and because Body Pump is unique in that it does not use a traditional progressive-resistance program of sets and repetitions or a circuit weight format, the purpose of this study was to determine the metabolic and physiologic responses to a typical Body Pump workout and to compare these responses with previously published studies on CWT.

Methods

Subjects

Fifteen men and 15 women from exercise classes at the University of Texas at Austin and in the surrounding community volunteered for this study. Subjects' age ranged from 19 to 38 years. The study was approved by the Institutional Review Board at the University of Texas at Austin. All subjects provided written informed consent and were instructed to report to the lab after having abstained from food, nicotine, and caffeine for at least 3 hours and after having abstained from strenuous activity or alcohol for 12 hours prior to testing. Subject characteristics are listed in Table 1.

Procedures

The Body Pump workout contains 9 tracks of movement, each targeting particular muscle groups. Each track incorporates approximately 100 repetitions for the targeted muscle group(s). Subjects performed both concentric and eccentric contractions throughout each track, which corresponded to the length of 1 song (approximately 5–7 minutes). The movements were, for the most part, common resistance-training exercises (for example, bicep curls and squats). The tracks were choreographed, and all of the movements were performed repeatedly throughout. The squat track, for example, consisted of full and partial squats, and the speed of movement, foot placement, and range of motion varied throughout the track. None of the exercises incorporated dynamic or traveling patterns because of the recommendation to utilize challenging weight loads. Some of the exercises would be considered fairly advanced, such as the clean and press or the dead lift row. The primary modification offered was to increase or decrease the weight load according to a subject's ability to maintain form and proper technique throughout the track.

Each subject completed 5 Body Pump sessions prior to exercise testing to learn how to correctly perform the Body Pump workout and to determine appropriate weight loads. During practice workouts, subjects followed a video recording of a typical Body Pump training session. They recorded the amount of weight used for each of the 9 tracks and whether the workload needed to be increased or decreased. Goal workloads were determined by the subjects using a weight that they determined elicited muscular fatigue during the track. Muscular fatigue was described as a feeling of working ''somewhat hard'' to ''hard'' while still executing the movements correctly. Trained evaluators observed each workout to make corrections and to ensure that the movements were performed exactly as demonstrated on the video. In addition, the evaluators encouraged subjects to increase or decrease weights according to the apparent ease or difficulty experienced during a particular track. Weight choices were 1.0, 2.5,

Table 2. Description of the Body Pump workout.

Track #	Time (min)	Target area(s)	Primary exercise(s)	Resistance (kg) F/M*
1	5	total body	general warm up	7.1/10.4
2	5	lower body	squats	12.5/14.0
3	7	chest	chest press	8.2/14.1
4	5	lower/upper body	dead lifts/rows	12.3/15.6
5	6	arms: tricep	dips/presses	8.3/12.5
6	5	arms: bicep	curls	8.3/12.4
7	6	lower body	lunges/hack squats	11.3/11.6
8	6	shoulders	rows/front raises	6.8/10.9
9	5	abdominals	crunches	

* F = women; M = men.

and 5 kg plates and could be added incrementally as needed. The bar used weighed 1.25 kg. Table 2 describes each track of the Body Pump workout and the average weight used by subjects during testing.

Subjects performed the same Body Pump video workout a minimum of 24 hours after the fifth practice session. $\dot{V}O_2$, $\dot{V}CO_2$, RER, and HR were measured continuously during the workout using the SensorMedics 2900 Metabolic Measurement Cart and Polar Heart Watch. (The caloric expenditure was then calculated using $\dot{V}O_2$ and RER.) The subjects were allowed to come off the mouthpiece between tracks to report RPE (ratings of perceived exertion; between 6–20 on the Borg scale) for both their upper body (UB) and lower body (LB). Whichever RPE was higher (UB or LB) was used as the subject's RPE for that track. The time that each subject was off the mouthpiece was eliminated from the metabolic analysis so that the data reported reflects only the work performed during each track. A lab technician adjusted the weight load between tracks on the basis of subject input and information recorded during practice sessions. No data was collected during the cool-down portion of the workout.

Five men and 5 women were randomly chosen to perform the workout a second time using identical amounts of weight as during their first trial. Paired t-tests determined that there were no significant differences for $\dot{V}O_2$ ($t = 1.08$, $p = 0.33$), HR ($t = 1.05$, $p = 0.34$), or kilocalorie ($t = 1.09$, $p = 0.33$) values for the Body Pump workout when 2 separate days were compared. In addition, the correlation coefficient between the 2 days was $r = 1.00$ for $\dot{V}O_2$, HR, and kilocalorie values. Because there were no differences between the 2 days, this allowed for testing the subjects on just 1 day.

Subjects completed a graded exercise test (GXT) to volitional fatigue on a treadmill. The GXT started at 4 $mi \cdot h^{-1}$ and a 0% grade. The speed was increased every 3 minutes by 1 $mi \cdot h^{-1}$ until an RER value of 1.0 was reached. At completion of this stage, speed was kept constant, and the grade was increased by 2% every 2 minutes. The subjects were encouraged to continue as long as possible to obtain peak values for oxygen uptake ($\dot{V}O_2$) and heart rate (HR). $\dot{V}O_2$ and HR were measured continuously during the GXT with a SensorMedics 2900 Metabolic Measurement Cart and a Polar Heart Watch. $\dot{V}O_2$peak was the highest 1-minute value obtained. Pretest calibration and posttest verification of calibration were conducted before and after each test with standard medical grade gases for the gas analyzers and a 3.0-liter syringe for the flowmeter. Subject body weight was measured each testing day (without shoes).

Body composition was assessed by hydrostatic weighing, as described by Behnke and Wilmore (4). The Lohman equation for women (9) and the Siri equation for men (10) were used to convert body density to relative body fat. Residual volume was measured out of water by the nitrogen dilution technique that has been described by Wilmore (11) and modified by Wilmore et al. (13).

Statistical Analysis

Mean values for physical, physiologic, and metabolic variables for men, women, and all subjects combined were calculated for the GXT, the body composition analysis, the total Body Pump workout, and each track of the Body Pump workout. Unpaired t-tests were used to determine whether there were significant differences between men and women for $\dot{V}O_2$peak, HRmax, percentage fat, fat mass (FM), and fat-free mass (FFM) from the GXT and body composition analysis.

Repeated-measures ANOVAs were used to determine whether there were significant differences between tracks for $\dot{V}O_2$, HR, $kcal \cdot min^{-1}$, RPE, and resistance ($p \leq 0.05$). If significantly different, a Tukey post hoc test was used to determine where the differences existed.

Multifactorial analysis of variance was used to determine whether there were significant differences between men and women from the Body Pump workout

Table 3. Metabolic and physiologic measures for entire Body Pump workout.

Gender	RER	$\dot{V}O_2$ (ml·kg^{-1}·min^{-1})	$\dot{V}O_2$ %peak	Heart rate (bpm)	Heart rate (% max)	$\dot{V}O_2$ (ml·kg FFM^{-1}·min^{-1})	Total (kcal)	RPE
Females	0.93 ± 0.04	14.3 ± 1.3*	28.0 ± 2.8	116.0 ± 17.6*	59.5 ± 8.0*	18.2 ± 1.7	214 ± 26*	15.2 ± 1.0
Males	0.97 ± 0.05	14.8 ± 1.3*	30.0 ± 3.4	131.3 ± 18.7*	66.4 ± 8.7*	19.2 ± 1.6	315 ± 42*	15.5 ± 1.0
Total	0.95 ± 0.05	14.8 ± 1.3	29.1 ± 3.4	123.6 ± 18.7	63.0 ± 8.7	8.5 ± 0.76	265 ± 60	15.3 ± 1.0

† Values are mean ± SD.
‡ RPE = rating of perceived exertion.
* $p < 0.01$ for comparisons of men and women.

Table 4. Metabolic measures during Body Pump by track.

Track # (n = 30)	HR (bpm)	%HRmax	$\dot{V}O_2$ (ml·kg^{-1}·min^{-1})	% $\dot{V}O_{2_{peak}}$	kcal·min^{-1}
1	109.2 ± 13.8	55.8 ± 6.4	14.3 ± 1.3	27.9 ± 3.4	5.1 ± 0.5
2*	127.4 ± 18.1	65.1 ± 8.5	21.7 ± 2.2	42.5 ± 4.9	7.7 ± 0.8
3	106.4 ± 15.6	54.3 ± 7.2	11.6 ± 1.2	22.7 ± 2.9	4.1 ± 0.4
4*	127.2 ± 17.6	65.0 ± 8.5	19.1 ± 2.3	37.4 ± 4.8	6.8 ± 0.8
5	110.3 ± 17.0	56.3 ± 8.0	13.2 ± 1.2	26.1 ± 3.5	4.7 ± 0.4
6	132.0 ± 20.5	67.3 ± 9.5	11.4 ± 1.4	22.3 ± 3.5	4.1 ± 0.5
7*	140.6 ± 20.0	71.7 ± 9.4	19.0 ± 2.0	37.2 ± 4.5	6.8 ± 0.7
8	122.2 ± 18.5	62.4 ± 8.9	13.3 ± 1.4	24.5 ± 3.9	4.7 ± 0.5
9	104.4 ± 15.1	53.2 ± 7.1	10.9 ± 1.3	19.7 ± 3.4	3.9 ± 0.5

† Values are mean ± SD.
* $p < 0.01$ for comparisons with other tracks.

for (a) $\dot{V}O_2$ (L·min^{-1}, ml·kg^{-1}·min^{-1}, and ml·kg FFM^{-1}), (b) percentage $\dot{V}O_2$peak; (c) HR, (d) percentage HRmax, (e) RER, (f) caloric expenditure (kcal·min^{-1}, kcal·kg^{-1}·min^{-1}, and kcal·kg FFM^{-1}·min^{-1}), (g) RPE, and (h) weight lifted (kg, kg·kg body weight^{-1}, and kg·kg FFM^{-1}).

Results

The subject characteristics are given in Table 1. Unpaired t-tests determined that there were no significant differences between men and women for $\dot{V}O_2$peak, HRmax, FM, and percentage fat. Men had significantly higher total body weight and FFM.

Table 3 gives the results for the entire Body Pump workout. These values are the mean values for the entire workout, all 9 tracks combined. Subjects performed the Body Pump workout at a mean $\dot{V}O_2$ of 14.8 ml·kg^{-1}·min^{-1} (29.1% of $\dot{V}O_2$peak) and at a mean HR of 123.6 b·min^{-1} (63.0% of HRmax). The caloric expenditure for the entire workout was 265 calories (5.3 cal·min^{-1}). A multifactorial analysis of variance determined that men had significantly higher $\dot{V}O_2$, HR, percentage HRmax, total kilocalories, kcal·min^{-1}, kcal·kg^{-1}·min^{-1}, and resistance than women during the Body Pump workout. There were no significant differences between men and women for percentage $\dot{V}O_2$peak; $\dot{V}O_2$ in ml·kg FFM^{-1}·min^{-1}; kcal·kg FFM^{-1}·min^{-1}; RER; RPE; and relative resistance, expressed as kg·kg body weight^{-1} or as kg·kg FFM^{-1} during the Body Pump workout. This table also shows that subjects worked at a much higher percentage HRmax (63.0%) than percentage $\dot{V}O_2$peak (29.1%).

Table 4 gives the results from the Body Pump workout by track for men and women combined. $\dot{V}O_2$ ranged from 10.9 to 21.7 ml·kg^{-1}·min^{-1}, and HR ranged from 104.4 to 140.6 b·min^{-1}. Repeated-measures ANOVAs revealed that there were significant differences among the tracks for $\dot{V}O_2$, HR, kcal·min^{-1}, and weight lifted. Tukey post hoc tests determined that the tracks using primarily the LB (tracks 2 and 7) and the LB and UB combined (track 4) had significantly greater values ($p \leq 0.01$) for $\dot{V}O_2$, HR, kcal·min^{-1}, and resistance than did tracks using primarily the UB (tracks 3, 5, 6, 8, and 10).

Discussion

Body Pump is a unique exercise program in that it incorporates progressive-resistance exercise into a group exercise setting. The design of a Body Pump workout is intended to provide a total-body, compre-

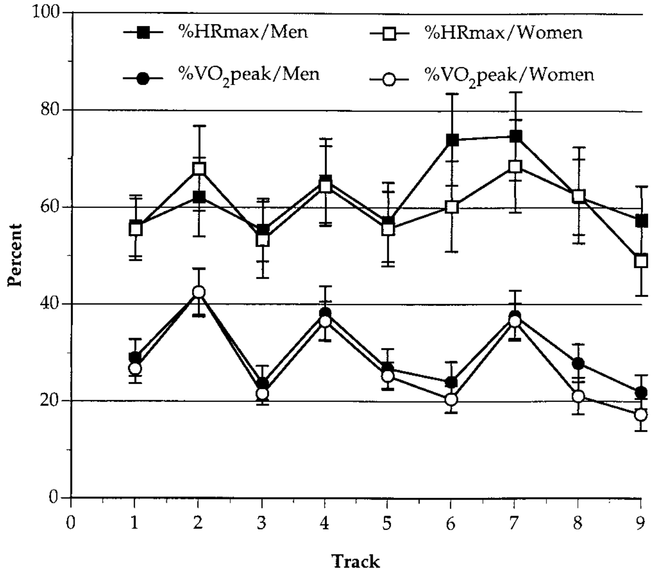

Figure 1. %HRmax and %$\dot{V}O_2$peak during Body Pump for men and women.

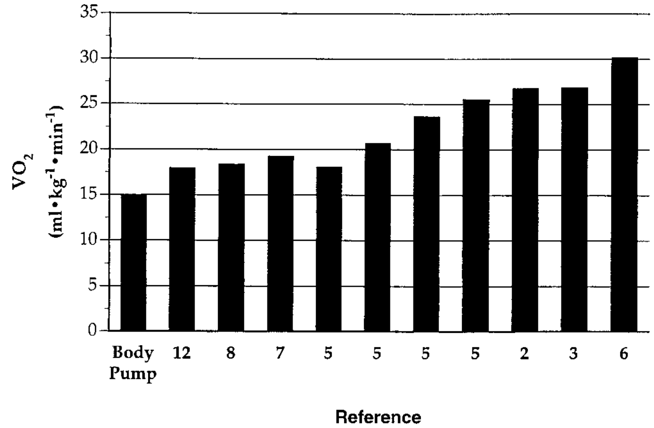

Figure 2. Comparison of $\dot{V}O_2$ during Body Pump and circuit weight training.

hensive weight-training program. The use of music and instruction and the opportunity for group interaction targets individuals who might not otherwise lift weights in a traditional setting. This study measured $\dot{V}O_2$, HR, caloric expenditure, and RPE during a typical Body Pump workout. It also compared the responses of men and women.

As shown in Table 3, the aerobic intensity of a single Body Pump workout is less than the 50–85% of $\dot{V}O_2$max that is recommended by the ACSM (American College of Sports Medicine; 1) as necessary to improve aerobic capacity, and HR overpredicts oxygen consumption during the workout. These facts are shown graphically in Figure 1. This $\dot{V}O_2$-HR relationship during Body Pump appears to be similar to other activities relying on weights (2, 3, 5–8, 12). Further research is needed to determine the effects of Body Pump on muscular strength and endurance, as well as any chronic effects on aerobic capacity.

The track-by-track analysis compared the segments of the Body Pump workout that were primarily UB and LB. Tracks 2, 4, and 7, which used primarily LB or used LB and UB muscle groups combined, elicited significantly higher $\dot{V}O_2$ than did the other tracks, which utilized primarily UB muscle groups. This difference may have been due to the fact that subjects were able to lift more weight during tracks 2, 4, and 7, thus incorporating a greater amount of muscle mass. It is difficult to speculate on the precise cause of this phenomenon because many of the tracks utilized a variety of different exercises, all performed at the same workload. For example, the squat track consisted simply of repeated squat movements with the variations mentioned previously. Track 4, however, combined deadlifts with rows and added an overhead press to the mix. Subjects were limited to using only an amount of weight that they could lift for every movement, even though they might, for example, have been able to deadlift significantly more weight than they could press overhead.

Although there are no direct comparisons available in the literature, the CWT program is the closest in design to Body Pump. There are several differences between Body Pump and CWT, including length of the workout, number of repetitions performed, and the resistance used. A standard Body Pump workout involves 9 tracks, isolating particular muscle groups for 5–7 minutes, over approximately 50 minutes. By comparison, CWT typically involves performing 1 set of 8–12 repetitions of each lift before moving to the next station. Multiple circuits of 1–3 sets generally constitute a "circuit workout," taking approximately 20–30 minutes to complete. Therefore, individuals lift less weight for longer periods of time during Body Pump than they do during CWT. Intuitively, this would also indicate that subjects are lifting at a lower percentage of their 1RM potential. In this study, the mean resistance ranged from 8.8 to 14.0 kg. None of the published CWT studies report the actual resistance, but since most CWT studies are designed to elicit muscular fatigue in 10–20 repetitions, it is highly probable that CWT is performed at a higher resistance and thus at a greater percentage of 1RM than is Body Pump.

Figures 2 and 3 provide a graphic comparison of Body Pump and CWT studies (2, 3, 5–8, 12). The $\dot{V}O_2$ during Body Pump (14.8 ml·kg^{-1}·min^{-1}) was less than the $\dot{V}O_2$ (17.9–30.1 ml·kg^{-1}·min−1) reported in these CWT studies. HR during Body Pump (124 b·min^{-1}) was also less than the HR (124–161 b·min^{-1}) determined from these CWT studies.

The fact that the $\dot{V}O_2$ during Body Pump was lower than CWT was not surprising, given that participants used less resistance (see Table 1 for values) during Body Pump than they did during CWT. Collins et al. (5) conducted a study in which subjects lifted 40, 50,

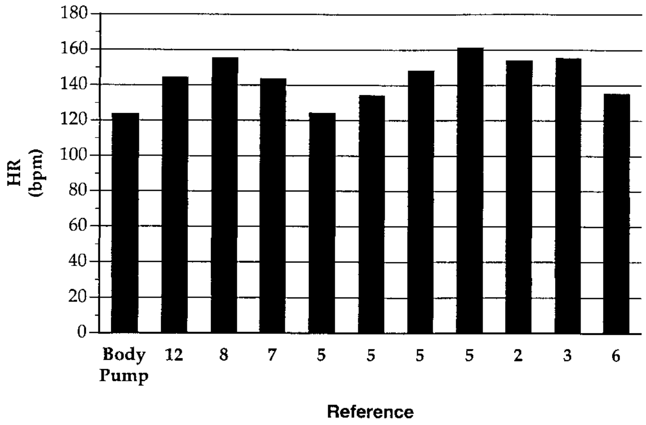

Figure 3. Comparison of HR during Body Pump and circuit weight training.

60, and 70% of their 1RM during a CWT workout. In their study, the $\dot{V}O_2$ ranged from a low of 18.0 $ml\cdot kg^{-1}\cdot min^{-1}$ at 40% 1RM to a high of 25.5 $ml\cdot kg^{-1}\cdot min^{-1}$ at 70% 1RM. If a Body Pump workout was performed at a higher intensity (i.e., with more resistance and at a greater percentage of 1RM), the values might be more comparable to those with CWT. Again, there is no way to determine this because most subjects are limited by the weakest muscle group in a particular track and do not change weight amounts during a given track.

Could the Body Pump workout be performed with more resistance? The subjects in the current study worked at a lower percentage HRmax than did those in CWT studies (2, 3, 5–8, 12), potentially indicating that the subjects in the current study could lift more weight and work at a higher intensity. However, the relatively high RPE in the current study and the technician observations that subjects achieved subjective muscular fatigue by the end of each track seem to rule out this possibility. Subjects completing the Body Pump workout lifted less weight than did those in a CWT workout because the same muscle(s) were targeted for the entire 5-minute to 7-minute track during Body Pump. Subjects were encouraged to lift the greatest amount of weight possible while still maintaining proper form; however, the repetitive nature of the movements made it challenging to complete some tracks. This result may be altered with training, in that individuals performing the Body Pump workout may be able to increase resistance because of neuromuscular and muscular training effects over time, but there is not evidence to support this at this time.

Garbutt et al. (6) reported the highest $\dot{V}O_2$ values of the CWT studies. The protocol used primarily multiple–muscle group exercises: squat, bench press, lateral pull-down, seated leg press, sit-up, seated row, dead lift, shoulder press and back extension. Subjects performed 15 repetitions of the leg exercises and 10 repetitions of the arm and trunk exercises at 40% 1RM (3 circuits with 30 seconds rest per exercise). By comparison, Body Pump relied on exercises using the large muscle groups during only 3 of the 9 tracks; the majority of the tracks isolated smaller muscle groups (Table 1). The metabolic cost of Body Pump may be increased by incorporating more exercises utilizing larger muscle groups combined with additional multiple-joint actions.

Another method for comparing Body Pump with CWT is to compare the O_2pulse ($\dot{V}O_2$ in milliliters divided by HR = O_2 uptake per beat) of these various studies. The O_2pulse during Body Pump was lower than CWT but was more comparable to the CWT studies of Hempel and Wells (7) and of Wilmore et al. (12), which were the only other studies that included equal numbers of men and women.

The oxygen uptake during this Body Pump workout was higher in men than in women when it was expressed as $L\cdot min^{-1}$ or as $ml\cdot kg^{-1}\cdot min^{-1}$ but not when it was expressed as $ml\cdot kg\ FFM^{-1}\cdot min^{-1}$. This is in agreement with the CWT studies of Hempel and Wells (7) and Wilmore et al. (12), but subjects in those studies worked at a higher $\dot{V}O_2$, a higher percentage $\dot{V}O_2max$, a higher HR, and a higher HRmax than did those in the current study. Once again, the difference between the current study and the studies by Hempel and Wells (7) and Wilmore et al. (12) is most likely due to subjects working with less resistance during a Body Pump workout than in a CWT workout.

In conclusion, the aerobic requirement of Body Pump is less than that of CWT and is less than that needed to elicit an aerobic-training effect. A training study is needed to evaluate the potential benefits of the Body Pump training program for changes in muscular strength, muscular endurance, and body composition. This information would help fitness professionals make appropriate choices and recommendations for individual programs. Body Pump could provide another viable option for those interested in beginning a resistance-training program or for those needing variety in their training program.

Practical Applications

Body Pump is one of the latest forms of exercise designed to appeal to a wide audience, from those individuals already exercising to those wanting to begin a fitness program. While this concept may have merit, this research indicates that individuals performing Body Pump do not work at a sufficient intensity to meet the ACSM's minimum recommendations for improving aerobic fitness. Individuals should not perform the Body Pump workout if the goal is to improve maximal oxygen uptake, because the Body Pump workout, while physically challenging, is not aerobically demanding. This should not be seen as a weakness, because the purpose of a Body Pump workout is not to improve aerobic fitness. Also, individuals should not expect similar changes from a Body Pump workout when compared with those from a CWT-type workout. The stated purpose of the Body Pump workout is to increase muscular strength and endurance; further research is needed to determine if this does, in fact, occur over time.

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