

The effects of the Les Mills
Strength Development
programme

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Summary

Strength Development resulted in meaningful strength improvements in squat, deadlift, and bench press, and jump height over 12 weeks. It also significantly improved participants' confidence to conduct strength training, and was enjoyed.

Objectives

To determine the effects of 12 weeks of the Strength Development programme on maximum strength performance, jump (power) performance, confidence to perform strength training, and motivation for strength training. General enjoyment was also assessed. The target participant cohort was intended to be representative of typical attendees of BODYPUMP™.

METHODS

Participants

Twenty three (16 female, 7 male) healthy recreationally active individuals with some prior experience in either BODYPUMP™ class attendance, or some personal strength training volunteered to participate.

Assessments occurred at baseline, week 6 of the programme, and on completion at week 12.

Assessments

Strength testing

Squat: An Olympic style barbell (20kg + loaded plates) was used to perform the squat. Subjects unracked the barbell from portable standing racks, placed it on their trapezius, and were instructed to use a natural hip-width stance. They were asked to squat until a 90° knee angle and then rise to a fully extended position. An adjustable box was used behind the participant as a tactile cue that the lowest range of motion point had been reached.

Bench press: The bench press was carried out using a BODYPUMP™ bar (3kg, plus loaded plates) and a BODYPUMP™ step which consisted of a bench and three ‘risers’. The participant lay supine on the bench and hands were positioned on the bar just outside shoulder width. From a starting position of extended elbows (the barbell was handed to them by an assistant), the bar was lowered to touch the chest. The subject then extended their arms until the barbell was back in the starting position.

Deadlift: A standard deadlift from floor was used. Feet were hip-distance apart, and the grip was approximately or slightly greater than hip width. The bar was lifted from a standard height to a fully extended position, then lowered to ground, and repeated.

Jump performance

Vertical jump height was assessed as an indication of muscular power. Participants were asked to simply perform a natural ‘jump as high as you can’ from a standing position. Height was assessed via a contact mat (Swift, Australia), well validated as an accurate tool to assess jump height based on flight time. Several attempts were allowed to determine true peak height, after some warm-up jumps.

Surveys

Participants were asked at each assessment occasion the following two questions with response options:

Using the % scale listed below please indicate how CONFIDENT you are about performing STRENGTH TRAINING right now
TICK below the relevant %

Not at all confident				Moderately confident						Completely confident
0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%

Using the % scale listed below please indicate how MOTIVATED you are about performing STRENGTH TRAINING in future
TICK below the relevant %

Not at all motivated				Moderately motivated						Completely motivated
0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%

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At the final (week 12) assessment point, participants were also asked:

Using the % scale listed below, please indicate your overall
ENJOYMENT of the strength training programme you've just completed
TICK below the relevant %

Not at all enjoyed				Moderately enjoyed						Completely enjoyed
0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%

The following open-ended questions were also included at the week 12 assessment:

Please briefly describe the key aspects you enjoyed.....

Any aspects you thought could be improved?.....

Please estimate how many sessions have you participated in over the last 12 weeks, and the typical number of sessions per week you did Strength Development

Strength Development class

Participants were invited to attend Strength Development group sessions delivered by a qualified instructor. They were asked to perform 1-3 sessions per week as their personal schedule allowed, and not to initiate any other physical training such as attending other personal strength training sessions, or commencing a new programme such as 'cardio' based training. If they habitually performed other exercise, this was permitted, other than strength training sessions.

Statistics

Descriptive data are presented as mean ± SD. Paired sample t-tests were carried out to estimate effects on variables for each exercise type independently, with an associated p-value for general interpretation. P-values of below 0.05 are considered 'statistically significant'. The number of participants at final assessment precluded the use of any statistically nuanced analyses, so the data representing the change over the time are simply provided as raw percent change.

RESULTS

Attendance

Of the 23 participants who commenced the programme, 13 were able to attend the week 6 assessments, and 11 the final week 12 assessments. Reasons for non-attendance were anecdotally reported as sickness, schedule clashes, or isolation restrictions owing to associates with COVID-19.

Class attendance for the 11 participants who attended week 12 assessments were 18 ± 8.4 sessions (range 8-36) in total over the duration of the 12 weeks, or 2.0 ± 0.5 (range 1.0 – 2.5) sessions per week.

Strength and Power

Table 1 provides the results for the 11 participants who completed both baseline and week 12 assessments.

Table 1: Strength, Jump height, Confidence, and Motivation from baseline to Week 12

	Baseline	12 weeks	% Change	P value
	M ± SD	M ± SD		
Jump Height (cm)	28.4 ± 6.6	29.9 ± 5.9	5.1%	0.026
Squat (kg)	73.2 ± 26.3	80.1 ± 25.7	9.4%	0.001
Deadlift (kg)	79.0 ± 26.2	91.2 ± 30.3	15.4%	0.010
Bench Press (kg)	47.1 ± 21.8	50.3 ± 24.0	6.8%	0.016
Confidence (0-100%)	76 ± 15	94 ± 8.0	22.6%	0.001
Motivation (0-100%)	83 ± 17	86 ± 9.0	3.6%	0.459

Strength improved for all three exercises, and jump height also improved. These were all ‘significant’ increases. The Confidence and Motivation scores were both improved, although Motivation to only a small extent. Confidence was considered a ‘significant’ increase.

The Enjoyment score for all week 12 assessment attendees was $93 \pm 0.7\%$

The week 6 results in the 13 participants who attended were very similar in pattern to the week 12 results with consistent improvement observed. Percent increases for squat, deadlift, and bench press respectively were (mean) 6.8%, 9.2%, and 1.5%. Jump height improvement was 0.6%. Confidence and Motivation scores were 11.6% and 6.0% improved respectively.

DISCUSSION

The improvements in Squat, Deadlift, Bench Press and Jump Height represent meaningful and impactful changes for these individuals. It is now well acknowledged and universally agreed that strength is an important aspect contributing to lifelong health and wellbeing, and any modality that can improve strength and power to the extent this programme did provides a potentially potent contributor to healthy function. That the programme also increased confidence to conduct strength training is also meaningful. Irrespective of future Strength Development class attendance, confidence is an important predictor of future independent uptake. In terms of the very small change in motivation at week 12, perhaps the week 6 result (6%) had ‘plateaued’ by 12 weeks, or perhaps the participants drawn to attending and completing the assessments were typically fairly motivated anyway.

Associated with this, the very high Enjoyment score and positive commentary provide a strong indication that the programme is not only of impact, but is likely to attract ongoing participation. We would all know that is key to the maintenance of a habit.

CONCLUSION

Twelve weeks of Strength Development improves strength, power, confidence to strength train, and is enjoyed. Six weeks of Strength Development appears to also produce some meaningful strength gains, and confidence, indicating a rapid trajectory toward positive outcomes.