

# Les Mills research: CXWORX study



## Background

Core training is an essential part of any training regime. The American College of Sports Medicine (ACSM), and U.S. Department of Health and Human Services recommends healthy adults complete core exercises twice per week.

## The Question

Which type of exercise – isolation or integration – will provoke the greater muscle activation and therefore provide optimal results in aiding sports performance, rehab and general fitness?

## Method

Twenty healthy college students (10 males and 10 females) were recruited to perform 16 isolation and integration exercises to measure the muscle response. Movements undertaken included, among others, an isolated crunch versus an integrated hover with hand reach, and an oblique twist versus the integrated side hover. EMG electrodes were placed over appropriate points of six muscles.

## Results

The results clearly showed that integrated exercises elicit the greatest muscular activation. For example, comparison of a hover with a hand reach (integrated) versus traditional isolated crunch (isolated) saw a 27% increase in rectus abdominus and external oblique activity for the hover. And when comparing a double arm trunk extension (isolated) versus a horse stance pointer (integrated), erector spinae activity was 38% greater during the integration exercise.

Integrated movements are more aligned with the way we use our trunk for everyday activities, therefore deliver a more functional benefit. Les Mills believes in functional training and we have incorporated this approach into both the CXWORX™ program and in the core training tracks for other programs.

Sometimes we refer to this as Reactive Core Training (RCT) – a situation where the core responds automatically rather than as a result of a voluntary contraction. RCT happens in many Les Mills programs – most notably BODYATTACK™, BODYPUMP™ and BODYCOMBAT™.

EMG investigations on BODYCOMBAT demonstrated that a typical class produces the equivalent core activation of 1700 crunches via the combination of upper body punches and lower body kicks.

## Conclusion

The study results show that for quality, time-efficient training, integrated exercises should be incorporated into a core-strengthening program to maximize strength, improve endurance, enhance stability, reduce injury and maintain mobility. A CXWORX class twice per week will help participants achieve all of the above benefits.

A link to the published abstract in the The Journal of Strength and Conditioning Research is available [here](#).