

Les Mills Lab: Push-up study



Introduction

A hotly debated topic amongst personal trainers in recent years has been concerned with whether knee push-ups do actually increase your upper body strength (pecs, shoulders, triceps and core), and help make you strong enough to then start doing them on your toes. The aim of this study was to answer these questions and dispel the common myth that knee push-ups aren't worth doing.

Question

The great push-up debate – will doing them on your knees increase your upper body strength and make you strong enough to do them on your toes?

The study

We conducted tests measuring muscle activation levels while study participants did push-ups on their knees and toes. We took 12 active men and asked them to complete each of the exercises while monitoring the activity in the key muscles of the upper body. The study participants were measured using electromyography (EMG) signals while performing push-ups on both the knees and the toes.

Results

The results showed that the amount of activation from each muscle in these two types of push-ups was similar. The only differences were that the overall intensity was higher while participants were on their toes because this kind of push-up requires more force. For example, the activity at the front of

the shoulder (anterior deltoid) was 68 percent greater when doing toe push-ups, but as a percentage of total activity, toe and knee push-ups did not differ.

Conclusion

The conclusion is that yes, doing push-ups on your knees does help increase your upper body strength and if you do enough of them to reach a point of fatigue, you will become strong enough to be able to do them on your toes. We often see people making this progression in our group fitness classes.

Recommendation

Our recommendation is don't leave push-ups out of your workout because you can't manage them on your toes. Be reassured that knee push-ups are a valuable alternative to toe push-ups in order to give your pecs, shoulders and triceps a good workout, at the same time strengthening the muscles of the core.

Once you can confidently do 16 push-ups on your knees, you're ready to try doing them on your toes. If you lose form, you can just drop back to your knees again.

A link to the paper published in the Journal of Applied Biomechanics is available [here](#).