

# THE EFFECTS OF DYNAMIC AND STATIC STRETCHING METHODS ON SPEED, AGILITY AND POWER

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# Aims of the Study

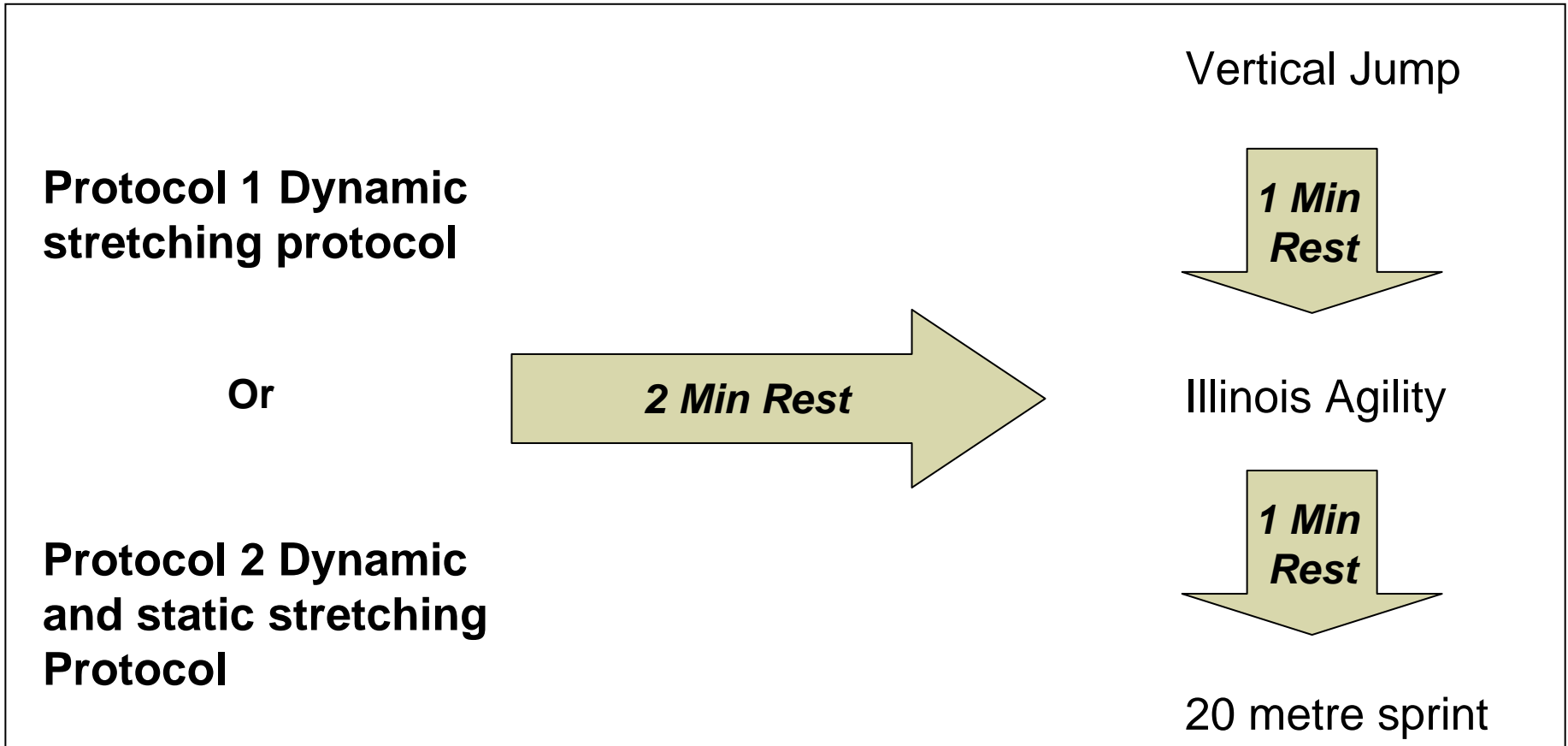
- To investigate, **using realistic protocols**, the effects on speed, agility and power of additional static stretching following a dynamic warm-up.
- Young (2007) outlined that it is not the general warm-up that is in question but the subsequent use and or combination of stretching and sports specific methods on performance measures.

# Aims

- Within the field there has been a shift to the use of dynamic warm-up methods.
- To date only a limited amount of studies have focused on assessing the impact of dynamic routines (e.g. Fletcher and Anness 2007 and Taylor et al. 2008).
- The study chooses to assess the effects of static stretching following a dynamic warm-up as this is common practice within the strength and conditioning community.

# Method

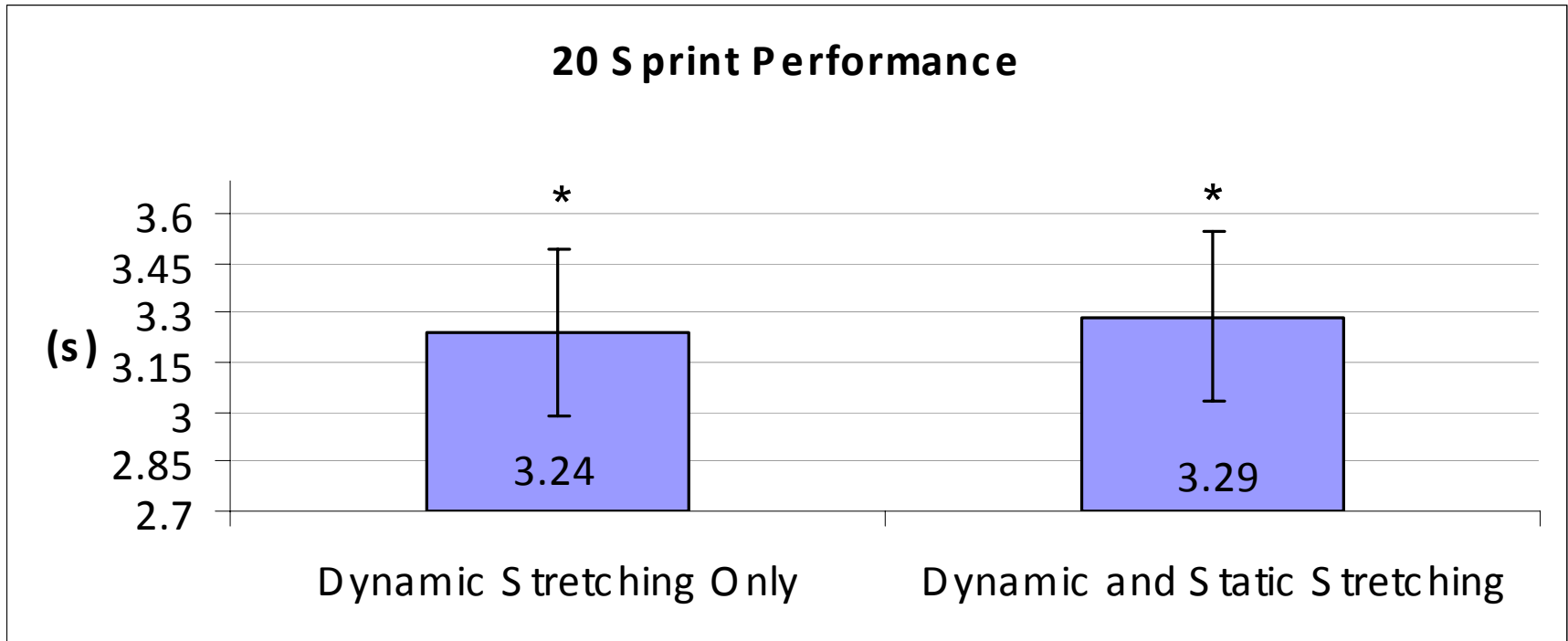
**32 University Sports students (25 male, 7 female)**



# Method

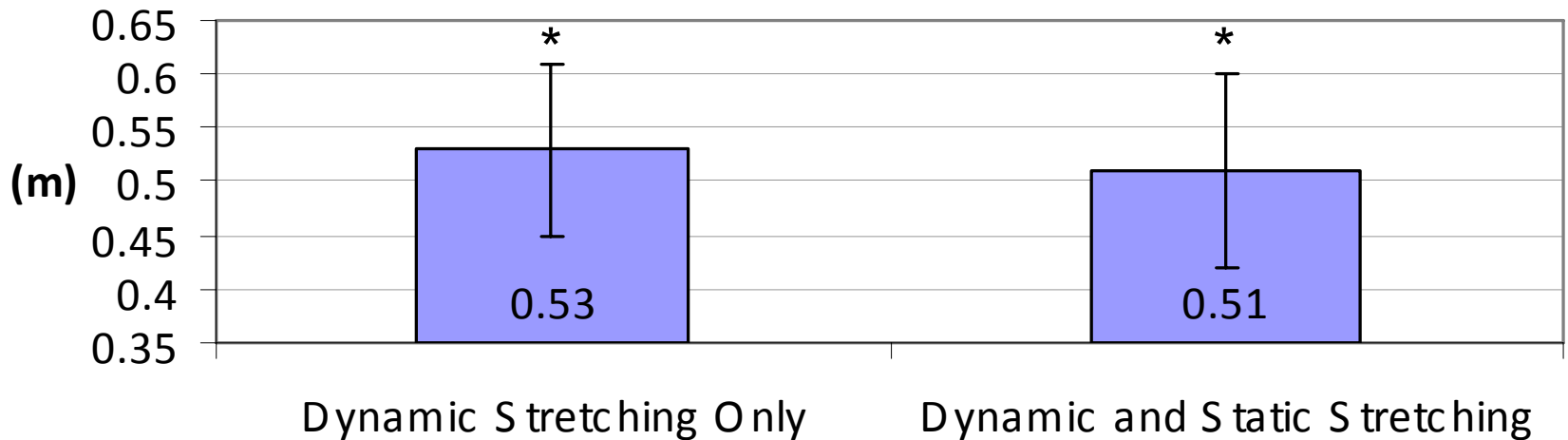
- The dynamic warm-up protocol used a series of progressive exercises lasting 10 minutes.
- The dynamic warm-up plus static stretching protocol used the same dynamic warm-up followed by stretches on 7 muscle groups, held at a point of mild discomfort for 20 seconds.
- Protocols concentrated on the quadriceps, hamstrings, gastrocnemius, soleus, gluteals, adductors and hip flexors.
- A two-way analysis of variance was conducted to identify differences ( $p \leq 0.05$ ) between the 3 performance measures over the two warm-up protocols and gender.

# Results

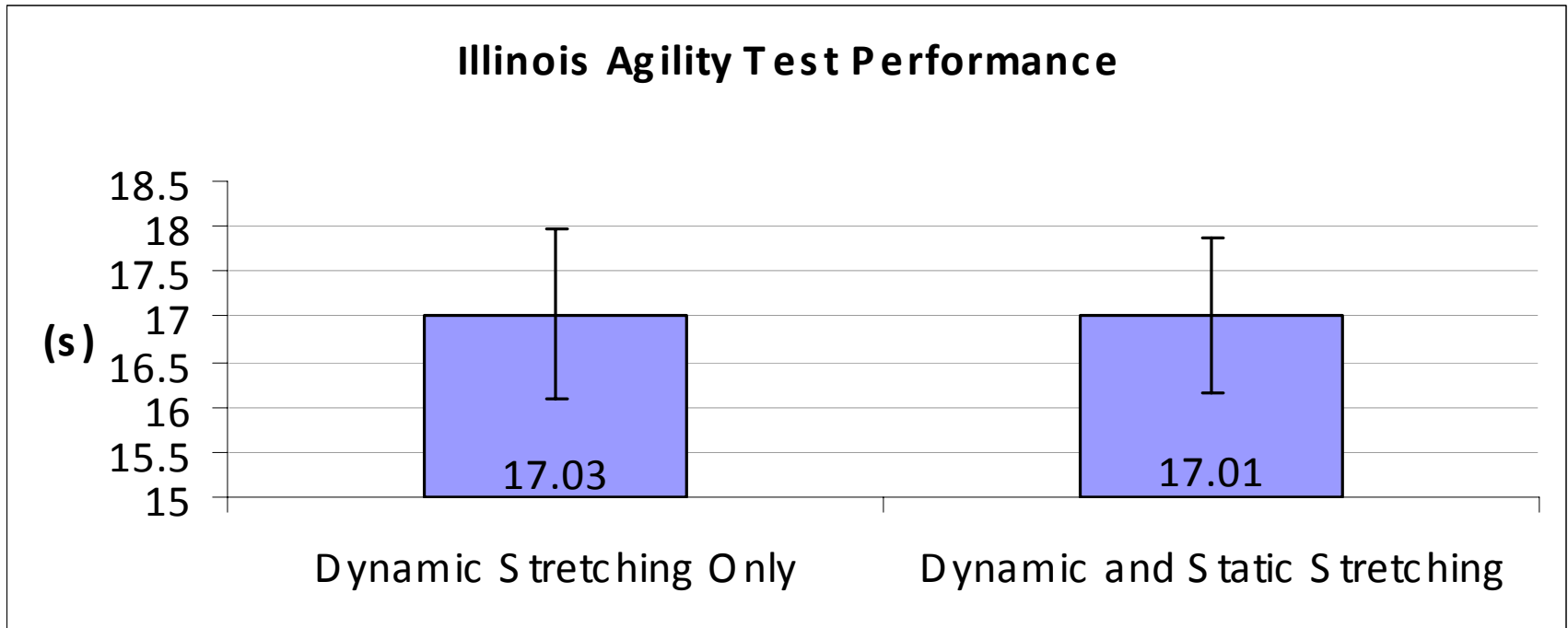


- 20m sprint performance was significantly reduced  $p=0.032$  with the inclusion of additional static stretching.

## Countermovement Jump Performance



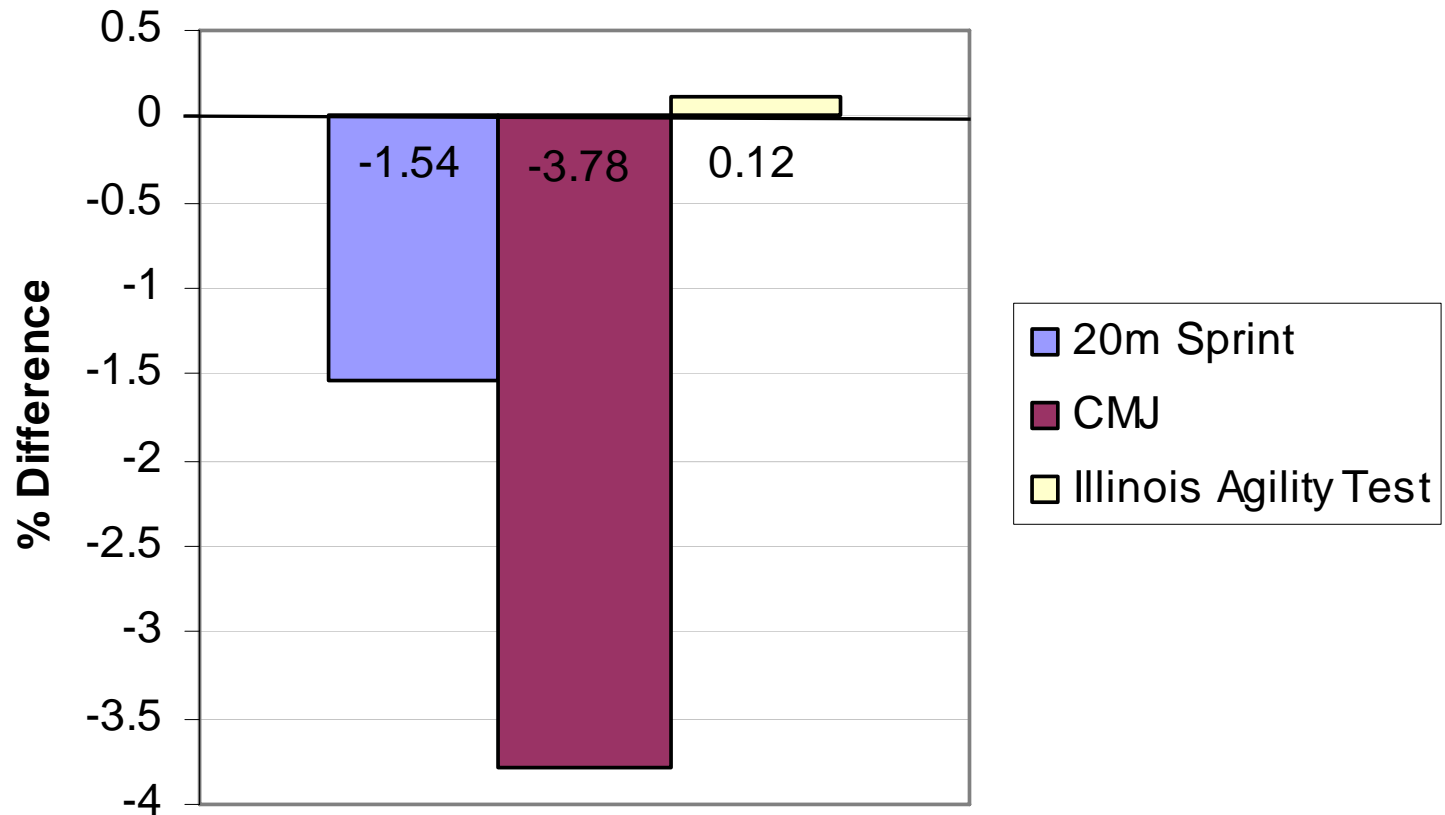
- Countermovement jump performance was significantly reduced  $p=0.039$  with the inclusion of additional static stretching.



- Illinois Agility performance showed no significant difference with the addition of static stretching  $p=0.353$ .



## Difference in Performance on the inclusion of Static Stretching to a Dynamic Warm-up



# Discussion

- The study indicates that static stretching for as little as 20 seconds after a dynamic warm-up can reduce sprinting and jumping performance.
- Taylor et al. (2008) found similar results when comparing a static stretching warm-up to a dynamic warm-up in the performance measures; 20m sprint and countermovement jump.
- Knudson et al. (2004) did not find any changes in tennis serve performance following the inclusion of static stretching after a 5 minute traditional tennis warm-up

# Discussion

- Previous literature has cited reductions in performance due to the inclusion of static stretching to be caused by the following;
  1. The alteration of the visco-elastic properties could result in a decreased stiffness of the Musculo Tendinous Unit (MTU) (Kokkonen et al. 1998, Avela et al. 1999).
  2. Knudson (2001) opposes this view proposing the changes are due to acute neural inhibition, resulting in an increase in autogenic inhibition which decreases neural drive to the muscle, leading to a decrease in muscle activation.

# Conclusion

- Practitioners and athletes from sports which involve explosive activities should use static stretching following a dynamic warm-up with caution.
- Further investigation into the effects of static stretching following dynamic and sports specific warm-ups are warranted with specific sporting populations.

Thank You

# References

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