TITELSEITE

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# Biomechanics of a toss to hands in cheer sport

* Current state of research?

**The history of cheerleading / What is cheer sport?**

With the rise of intercollegiate football games in the mid-1800s fans started chanting fight songs to cheer on their college team ([[1]](#footnote-1), [[2]](#footnote-2), [[3]](#footnote-3)). In November 1989 Johnny Campbell, a student at the University of Minnesota, was the first to enter the field organize the crowd in their chant – the first cheerleader (1, 3). Until the early 1920s cheerleading grew to an all-male extracurricular activity, offered by high schools and colleges across the US (1, 2, 3). In 1923 the first woman was allowed to join a cheerleading squad, however, it took 20 more years for female cheerleaders to not be an exception in cheer teams (1, 2, 3). In these (and following) centuries cheerleaders expanded their skill set by adding tumbling and acrobatics to their routines, as well as props such as megaphones, signs and poms (1, 3). By now, cheerleading is predominantly female (90?% in Germany in 2021[[4]](#footnote-4)). Cheer sport is recognized by the International Olympic Committee[[5]](#footnote-5) and contains everything between side-line cheers and highly competitive athleticism. Today, Cheersport unites all kind of disciplines that originate from organised groups cheering on certain sports teams. This includes but is not limited to:

* sideline teams: slow/static acrobatics paired with claps, motions and chants, usually affiliated with a football team.
* competitive teams: practicing with the main goal of skill acquisition and competing at championships; usually more fast paced routines and higher difficulty acrobatics and tumbling.
* dance teams: highest variety of disciplines from hip hop to pom dance with simple, smoothly executed tumbling and acrobatic elements.

This study refers for the most part to competitive cheerleading. Competitive Cheerleading is categorized by skill level (ranging from zero to seven), age (peewees, juniors, and seniors) and team composition (female-only teams called all-girl teams and mixed teams with up to four or more male athletes called coed). The combination of level, age, and team composition defines the division under which the teams compete against each other.

## The toss to hands

The toss to hands is one of the most basic however fairly technically difficult stunts in coed stunting. Coed stunting usually refers to a male base with a female flyer, where the base lifts the flyer into the air and catches them afterwards on their own.   
A toss to hands is a mounting element where the base tosses the flyer so they will land in the base’s hands, standing. Therefore, the base stands behind the flyer with their hands holding onto the flyer’s hips. The flyers’ hands grab the wrists of the base from above. The flyer then performs a squat jump, pushing off the base’s wrists. The base follows the movement of the flyer and extends their arms above their head before releasing the flyer’s hips. The base then catches the flyers feet, completing the movement by standing with the flyer’s feet in their hands at shoulder height.

## Why is this necessary?

# Methods

* Overall procedure

## Participant recruitment

## Marker Placement

### Upper Body

Sources: Wu et al. (2005),

### Lower Body

Sources: Wu et al. (2002),

## Data Acquisition

## Judge recruitment

## Judges’ questions

# Results

## Quantitative results

## Qualitative results

# Discussion

* Combine quantitative and qualitative results

# Conclusion?

* Phrase qualities of a ‘good’ toss to hands

1. Varsity, 2014. [Being a Cheerleader - History of Cheerleading - Varsity.com](https://www.varsity.com/news/cheerleader-history-cheerleading/) [↑](#footnote-ref-1)
2. Grindstaff, Laura Anne (Britannica), 2022 [Cheerleading | Definition, History, & Facts | Britannica](https://www.britannica.com/sports/cheerleading)

   [↑](#footnote-ref-2)
3. USA cheer [History of Cheerleading - USA Cheer](https://usacheer.org/history-of-cheerleading) [↑](#footnote-ref-3)
4. CCVD statistik M/W? [↑](#footnote-ref-4)
5. [ICU - International Cheer Union (olympics.com)](https://olympics.com/ioc/recognised-international-federations/international-cheer-union) [↑](#footnote-ref-5)