

# Vision of the body enhances touch

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Tactile discrimination training (TDT) is used clinically to assist patients regain tactile function and has been found to reduce both acute and chronic pain<sup>1</sup>. Conventionally patients look away from a tactile stimulus during training or have vision occluded, however recent literature suggests that vision of the body during TDT may actually improve tactile sensation.

The primary somatosensory area of the brain (S1), thought to only activate during a tactile stimulus, appears to be modulated by vision of the body<sup>2</sup>. The cross-modal pairing of touch and vision may improve tactile acuity through changing the representation of the body in S1<sup>3</sup>.

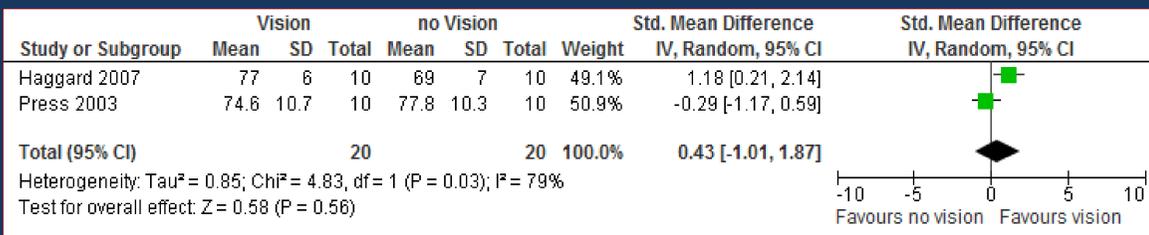
**Aim: to systematically review and evaluate the evidence as to whether vision of the body has an effect on tactile acuity.**

## METHODS

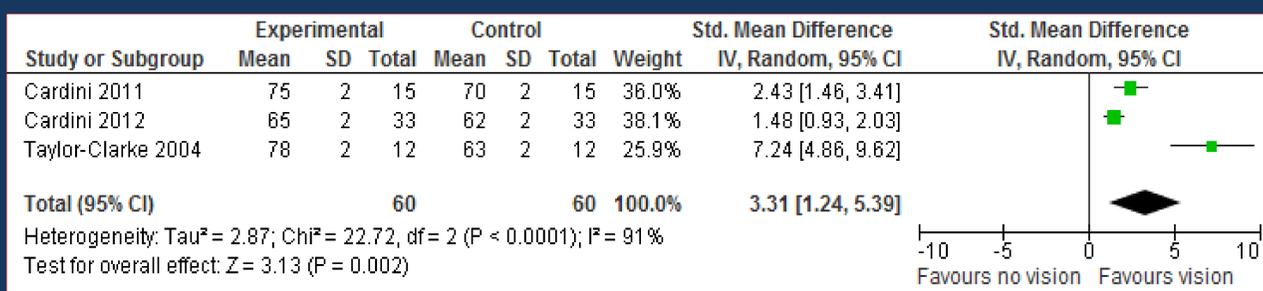
- Studies were systematically identified and reviewed using a standard PRISMA protocol<sup>4</sup>
- Included studies investigated tactile acuity with vision of the body, as compared to vision of a neutral object or vision occluded, using healthy participants.
- An adapted version of the Cochrane risk of bias form was used to assess methodological quality<sup>5</sup>.
- Five studies were combined in two meta-analyses and a descriptive synthesis of all study results was then undertaken.

## RESULTS

Of the 996 records screened 9 studies with 171 healthy participants and a low to moderate risk of bias were included. All assessed a change in tactile acuity. Despite the diversity of training protocols and outcome measures used **eight out of nine studies reported vision of the body as having a positive effect on tactile acuity.**



Meta-analysis for spatial discrimination tasks



Meta-analysis with significant positive effect of vision of the body on grating orientation tasks

## DISCUSSION

Vision of the body during tactile sensory training does influence and enhance tactile acuity.

Eight studies controlled for spatial attention and all reported that viewing a neutral object at the same location of the arm did not improve performance, suggesting that the visual stimulus must be attributed to the body to alter tactile perception

Only one study did not report statistically significant improvements in tactile acuity, however they found positive results for reaction times<sup>6</sup>, suggesting an improvement in motor function. This only adds to the evidence for using vision in a rehabilitation program.

Enhanced tactile acuity was found with a delay between vision and touch, with magnification of the body and at both the hand and foot.

Findings suggests that patients may have significant gains from tactile training with the use of vision<sup>7</sup>

A review of the conventional clinical approach to vision during TDT may be necessary.

### REFERENCES

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