WITHIN-SUBJECTS' VARIABILITY OF PAIN INTENSITY REPORTS AND VARIABILITY OF REPORT OF OTHER BODILY SENSATIONS IN DANCERS

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Introduction

- Pain is a highly subjective experience and a challenge for clinicians and researchers to measure and treat. One of the reasons for these difficulties is thought to be the high variability in pain reporting [(1)].
- Previous studies showed that in healthy populations, within-subjects' variability of pain report is not related with the variability of other bodily sensation reports [(2)].
- However, it is still unclear if in populations with higher awareness of their body, such as dancers, relations between variability in different sensory modalities can be found.
- The aim of the current study was to assess if in dancers there are relations between variability in pain and in variability in reporting other sensory modalities, as heartbeat and taste.

Materials and Methods

- Dance students were recruited from the Higher School of Dance of Lisbon, Portugal.
- Pain variability was assessed using the Focused Analgesia Selection Test (FAST). The procedure assesses pain reporting variability by calculating the R2, ICC and CoV values of relations between pain reports and stimuli intensities.
- Taste variability was assessed exposing individuals to salty and sweet solutions of different intensities, similarly to FAST. The same outcome measures are calculated.
- Interoception was assessed through the Heartbeat Perception Task (The overall score was obtained using the formula: IAc score= 1/3∑[1-(recorded heartbeats - counted heartbeats) / recorded heartbeats]) and the Multidimensional Assessment of Interoceptive Awareness.
- Heat pain threshold and tolerance were also measured as well as psychological characteristics (Perceived Stress Scale, Self-Consciousness Scale and Hospital Anxiety and Depression Scale) and memory performance (through Digit Span task)

Results

Participants' Characteristics

- Thirty-three dance students completed the study (7 men and 26 women), with mean ± standard deviation (SD) of 19.67 ± 2.03 years. Years of dance practice had a mean of 11.12 ± 3.83.

FAST outcome measures

- Figure 1 illustrates the FAST average results for each temperature stimuli in overall sample with statistical significant differences between them.

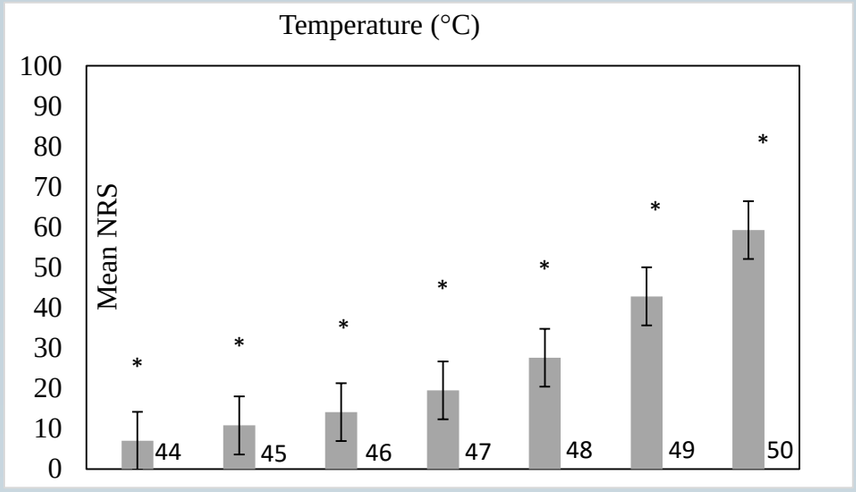

Figure 1. FAST Mean Numeric Rating Scale

- Table 1 summarizes the FAST outcomes of reporting accuracy.

	R2	ICC	CoV
Mean (SD)	0.49 (0.13)	0.69 (0.09)	0.75 (0.30)
Median	0.49	0.70	0.71
Minimum	0.29	0.50	0.28
Maximum	0.70	0.82	1.48

Table 1. FAST outcome measures

Taste task

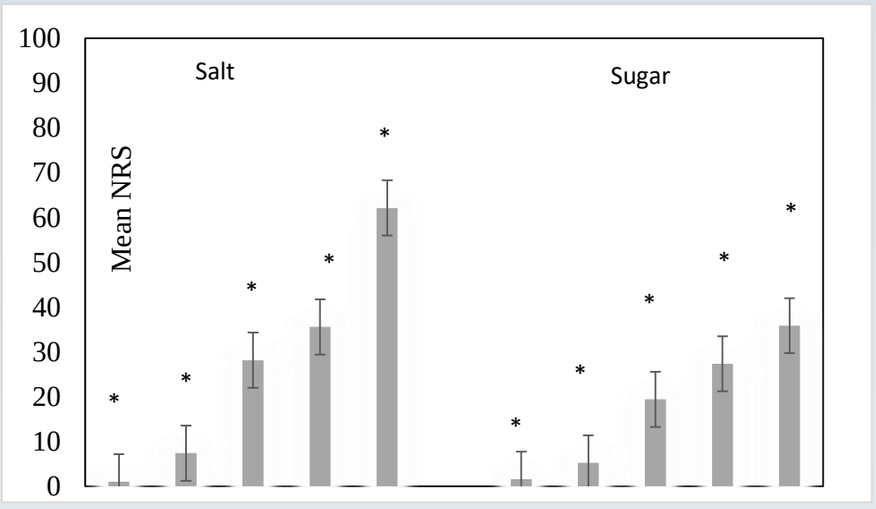

Figure 2. Mean Numeric Rating Scale for salt and sugar

Salt	R2	ICC	CoV
Mean (SD)	0.737 (0.174)	0.866 (0.091)	0.484 (0.243)
Range	0.13-.092	0.56-0.99	0.16-1.06
Sugar			
Mean (SD)	0.648 (0.193)	0.740 (0.185)	0.661 (0.238)
Range	0.14-0.88	0.34-0.93	0.23-1.25

Table 2. Outcome measures for Taste Task

Interoception outcome measures

The overall result of Interoception accuracy task indicated a mean heartbeat detection score of *M*=0.422 and *SD*=0.316, with a lowest score of 0 and a highest score of 0.993. Thus, these results suggest a high variability of subjects scores in response to this task.

Associations between accuracy tests from different modalities

- Results showed significant relations between variability within the same modality, taste (Spearman's r=0.508, P=0.003), and between CoV FAST and CoV sweet taste (Spearman's r=0.356, P=0.042). No other between-modalities relations were found
- Years of dance practice were related to lower within-subjects' variability in pain (Spearman's r=0.447, P=0.009).
- No correlations were found between FAST outcome measures and pain sensitivity measures.
- It was found significative positive correlations between the MAIA "not distracting" subscale and FAST R2 (r=0.390;P=0.025), as well as R2 sugar, ICC sugar and ICC salt.
- There were positive correlation between inverse digit span and CoV FAST (r=0364, P=0.037).

Conclusions

- In line with previous studies these results suggest that within subjects' variability cannot be generalized to other modalities[(3)].
- Professional dancers are given extensive training in detecting and modulating their body states [(4, 5)]. The correlation between pain reporting accuracy (FAST ICC outcome) and years of dance practice indicates that exposure to long-term dance practice may be indeed a key factor on pain accuracy in dancers.
- In dancers, but not in controls, the better the ability to focus on body signals and to avoid being distracted from pain or other negative sensations, the better the ability to reliably report both pain and taste.

Our results show evidence that there are relations between pain reporting variability within the same sensory modality and that there is an increase in the relations between pain reporting accuracy and accuracy in reporting other bodily sensations in dancers with more years of dance experience. Treister (2018)[(6)] has recently showed that pain accuracy is a trainable skill that can be improved by an evoked-pain training approach.
In summary, variability of bodily signals is mostly a within-modality characteristic, but further studies are needed to fully understand how practice could impact the variability of reporting different sensorial modalities.

References

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