Oral supplementation of specific collagen peptides accelerates improvement in Achilles tendon pain and function in combination with a tailored exercise program

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PURPOSE: At a histological level tendinopathy is characterised by an imbalance in tendon collagen synthesis and structural fibril degradation. The current pilot study aimed to investigate whether oral supplementation of specific collagen peptides (sCPs) in combination with structured exercise improves symptoms and tendon structure in patients with chronic Achilles tendinopathy.

METHODS: In a prospective double-blinded placebo-controlled clinical trial with cross-over design, participants were randomized to 3 months of bi-daily doses of 2.5g sCPs (TENDOFORTE®, GELITA AG, Germany) or a placebo 30 mins before exercise. The ethics committee of the Australian Institute of Sport approved the study design. Group AB received sCPs for the first 3 months before crossing over to placebo. Group BA received placebo first before crossing over to sCPs. All participants followed a bi-daily calf strengthening program and milestone-based return-to-running program for 6 months. At baseline (T1), 3 (T2) and 6 (T3) months, VISA-A questionnaires [1] and MRI-based ultrashort echo time (UTE) measurements [2] were obtained in 20 patients with clinical symptoms of uni- or bilateral Achilles tendinopathy.

RESULTS: Linear mixed modeling statistics showed that after 3 months, VISA-A increased significantly for group AB with 12.6[95%CI:9.7;15.5], while in group BA VISA-A increased only by 5.3[95%CI:2.3;8.3] points. After crossing over group AB and BA showed subsequently a significant increase in VISA-A of respectively 5.9[95%CI:2.8;9.0] and 17.7[95%CI:14.6;20.7].(Fig.1) After 3 months, 6 out of 10 participants in group AB and 3 out of 10 participants in group BA successfully returned to running activities. After 6 months these numbers further increased to respectively 7 (group AB) and 5 (group BA) participants (Fig.2). UTE-based volumetric T2* cluster-analyses (Fig.3) of respectively non-tendinopathic, moderately and severely tendinopathic zones indicated an improvement in some participants, but data failed to reach level of statistical significance.

CONCLUSIONS: Although this pilot study has limited statistical power and requires duplication in a larger clinical trial, oral supplementation of sCPs may accelerate the clinical benefits of a well-structured calf strengthening and return-to-running program in patients with chronic Achilles tendinopathy symptoms. Further imaging studies are required to understand the potential in vivo therapeutic working mechanism of sCPs within the human fascial system.
Figure 1: Progression of the mean VISA-A scores during the course of the study in group AB (blue columns) and group BA (red columns). Data represent mean ± SD. Statistical analysis of changes in VISA-A scores at T1, T2 and T3 via linear mixed modeling. P values ≤ 0.05 were considered statistically significant and marked with an asterisk.

Figure 2: Number of participants in group AB (blue columns) and group BA (red columns) that were able to return to running sport at T2 and T3.

Figure 3: Example of volumetric UTE-based T2* analysis in individual patient at T1, T2 and T3. At T3 (right panel) there is an 8% volumetric decrease in severe tendinopathic tissue (marked as yellow-red voxels).

REFERENCES

DISCLOSURES
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