

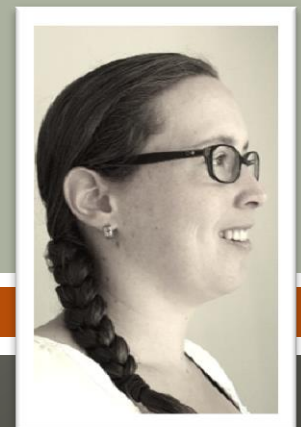


Decrease of elbow pain in handball goalkeepers after completing a summer training program

a case series study



L. Coppens, M. Barendrecht



3rd EHF Scientific Conference

Linda Coppens, MSc /Sport-physiotherapist
The Netherlands

3rd EHF Scientific Conference

About the study

- Handball goalie's elbow
- Methods

Results

- Individual results
- Group level

Discussion

- Comparison with other studies
- Strength/limitations of this case study

Conclusion

- Conclusion and recommendations

Handball goalie's elbow

Clinical relevance

- 75% of all goalkeepers experience elbow pain during career
- Symptoms:
 - pain, in particular on medial side
 - decreased strength
 - decreased ROM
 - (chronic) instability
 - swelling

Handball goalie's elbow

Clinical relevance

- High incidence of elbow pain among handball goalie's
- No adequate solution for rehabilitation
- Goalkeepers keep on playing with elbow pain
(or finally quit because of elbow pain...)

Handball goalie's elbow

Injury mechanism

- Elbow pain is caused by blocking the ball (in 95% of all cases)
- Impact of the ball causes a large valgus- and hyperextension load on the elbow
- Injury of the medial (ulnar) structures of the elbow

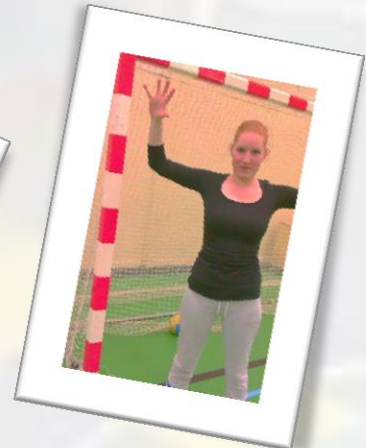
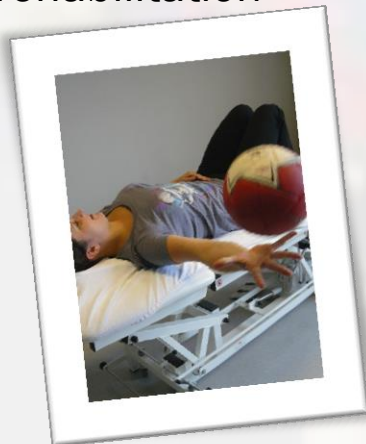
Tyrdal /Bahr (1996), Tyrdal/Finnanger (1998), Tyrdal/Pettersen (1998) ,
Bahr/Meahlum (2003), Akgun e.a. (2008)



Handball goalie's elbow

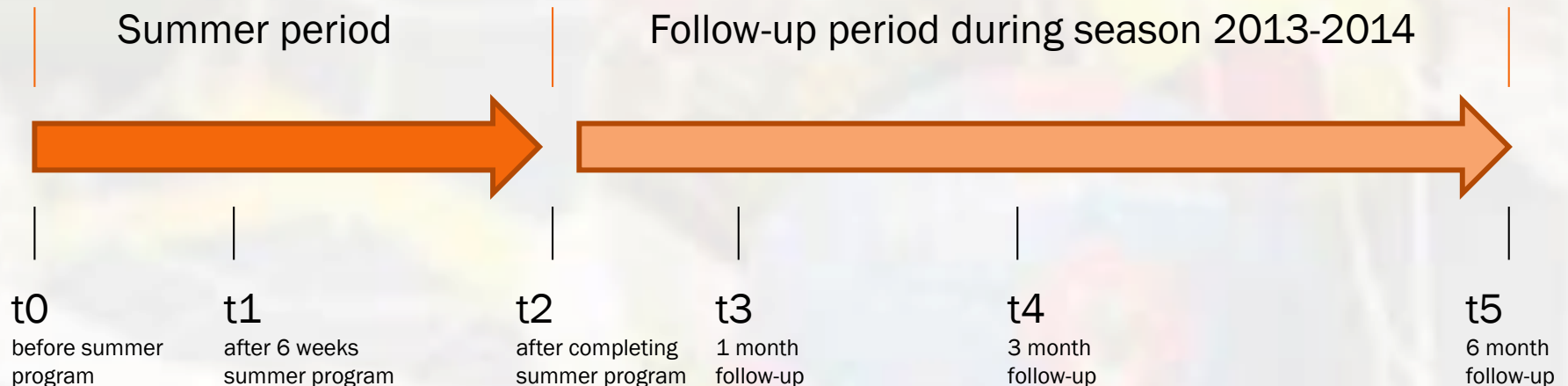
A specific (training) program during the summer period was expected to have a positive influence on the recovery of elbow pain in handball goalkeepers

- Focus:
 - gradual increase of (specific) load on the elbow
 - strength training for pronators/flexors
- Combination of mobilisations/strength training/specific exercises/throw and thrust impact during rehabilitation



Method

Prospective case series study



Pain

Visual Analogue Scale (VAS)
Numeric Pain Rating Scale (NPRS)

Function

Dutch Disability of the Arm, Shoulder and Hand questionnaire (DASH-NL)

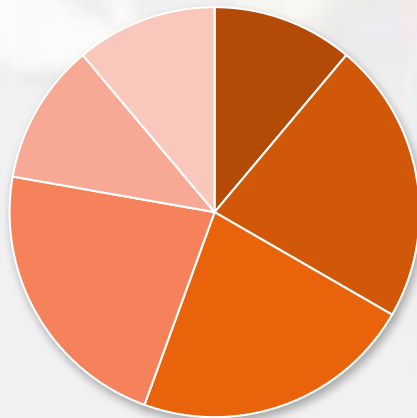
Strength

Handgrip strength (JAMAR dynamometer)

Results

Demographics:

- 5 male / 4 female participants
- Average age: 23 years old (SD=4,5 ; range 17-28 years)
- All goalkeepers were still active players on senior level
- Average years of training: 12,1 years (SD=4,2 ; range 4,5-17 years)
- Training intensity: 5,5 hours per week (SD=1,8 ; range 1,5-8 hours)



- Premier National League (NHV Eredivisie)
- 1st National Division
- 2nd National Division
- Premier Regional League
- 1st League (regional)
- 4th League (regional)

Results

Patient history

- Duration of symptoms: 63,9 months (SD=42,5; range 24-130 months)
- Onset:
 - 5 participants: trauma moment during blocking the ball
 - 4 participants: start training on senior level at younger age (<18y)
- Previous treatment:
 - Six goalkeepers (66,7%) already had some kind of treatment before
 - Six goalkeepers (66,7%) wore a brace/taping during sports

Results - individually

After completing the summer program, all individual participants showed clinical relevant improvements

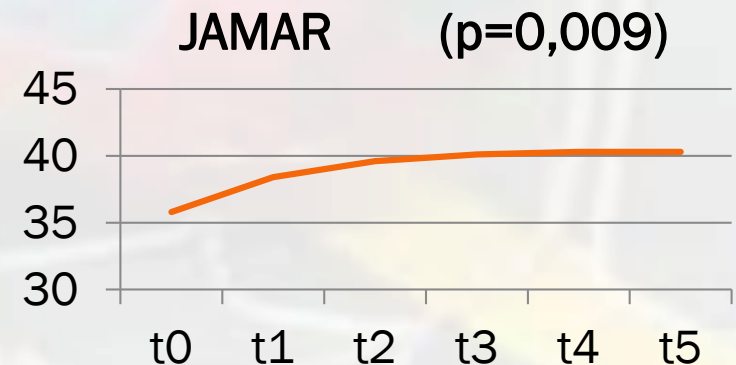
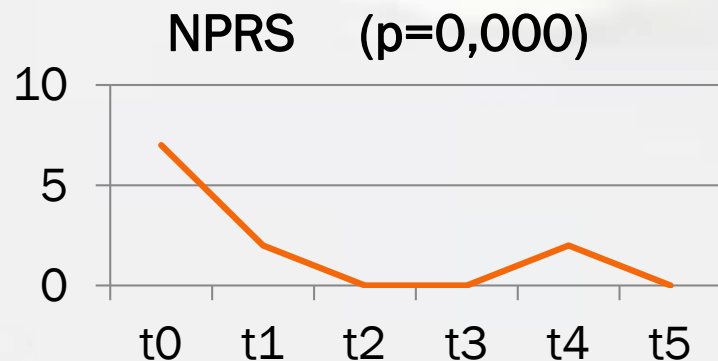
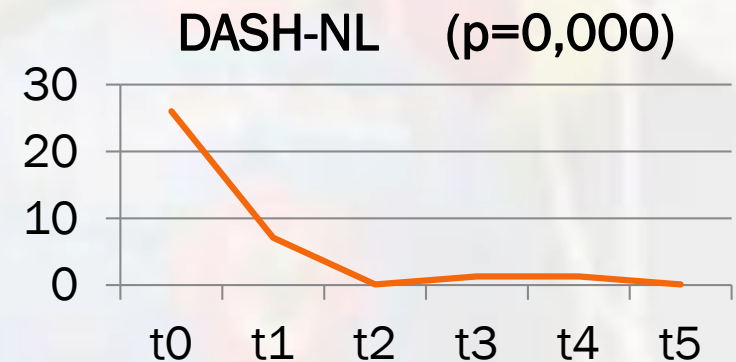
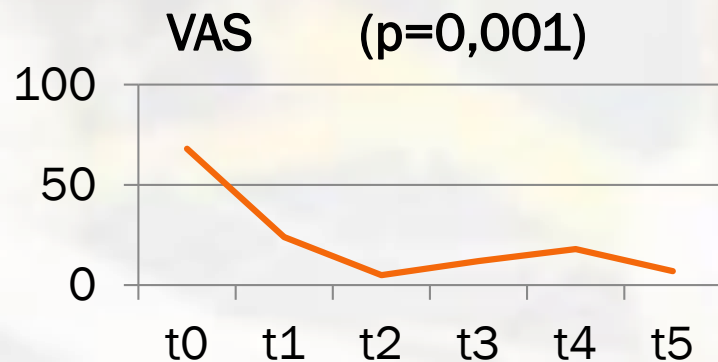
- VAS: >70% decrease of pain
- NPRS: >66% decrease of pain
- DASH-NL: >95% decrease of limitations in daily life

All goalkeepers returned to their previous competition level

None of the goalkeepers missed a training/match because of elbow pain during the season 2013-2014

Results – group level

After summer program (t2) and follow-up period (t5), significant improvements were found on group level, compared to baseline (t0)



Discussion

Results of this study compared to previous studies

- More focus on flexors/pronators and functional training
- Evident decrease of pain and functional improvement
- No drop-outs during the next season because of elbow pain
- Comparison of strength improvements is hard to make

Discussion

Strength/limitations of this study

- Detailed program, timing during summer season, long follow-up period
- Small population, no control group
 - Description of (significant) improvements on group level and clinical relevant improvements on individual level

Conclusion and recommendations

A specific summer program for handball goalie's elbow seems to improve function, and can lead to full return to sports on previous competition level without re-injury in the next season

Further research on a larger scale is however indicated to confirm the results of this case series!

Further research about the injury mechanism might be useful as well, to check for opportunities to prevent the onset of elbow pain already at younger age...



Thanks for your attention



References

- S. Tyrdal, R. Bahr (1996); High prevalence of elbow problems among goalkeepers in European team handball – ‘handball goalie’s elbow’; Scandinavian journal of science, medicine and sports; vol. 6; pag. 297-302
- S. Tyrdal, A. Finnanger (1998); Osseous manifestations of ‘handball goalie’s elbow’; Scandinavian journal of science, medicine and sports; vol. 9; pag. 92-97
- S. Tyrdal, O. Pettersen (1998); The effect of strength training on ‘handball goalie’s elbow’ – a prospective uncontrolled clinical trial; Scandinavian journal of medicine, science and sports; vol. 8; pag. 33-41
- R. Bahr, S. Maehlum (2003); Clinical guide to sports injuries; ISBN-10 0736041176; ISBN-13 978-0736041171
- U. Akgun, M. Karahan, C. Tiryaki, B. Erol, L. Engebretsen (2008); Direction of the load on the elbow of the ball blocking handball goalie; Knee surgery, sports, traumatology and arthroscopy; vol. 16 (5); pag. 522-530
- Mavropoulou Aggeliki, Hatzimanouil Dimitrios, Lazaridis Savvas, Iconomou Charalabos, Papadopoulos Konstantinos (2012); Subjective perception of pain characteristics in team handball players with “goalie’s elbow”: effects of a muscle strengthening protocol; Physical training e-journal (<http://www.ejmas.com/pt>)
- Mavropoulou Aggeliki, Hatzimanouil Dimitrios, Lazeridis Savvas, Iconomou Charalabos, Sikaras Euaggelos (2012); Effect of a strength training protocol on flexibility of elbow joint for “handball goalie’s elbow” injuries; Physical training e-journal; (<http://www.ejmas.com/pt>)