Athletes and non-athletes with back pain: Do they differ with respect to pain coping?

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Background/Aims

Recent research indicates comparable rates for low back pain (LBP) in athletes and non-athletes despite significantly higher levels of physical activity and lower age in athletes. In non-athletes, there is substantial evidence, that psychosocial risk factors, such as depression, fear-avoidance and endurance pain coping may modulate pain and disability. Different subgroups with high fear-avoidance or endurance coping displayed poorer outcome compared to an adaptive subgroup, supporting the avoidance-endurance model of pain[1] (see description of subgroup characteristics in Figure 1).

However, there is a lack of research in pain-related coping in athletes. Based on recent results showing higher pain tolerance scores in healthy athletes[2], presumably due to long-standing painful training, we hypothesized that athletes suffering from back pain may reveal higher frequency of endurance coping and less avoidance than non-athletes.

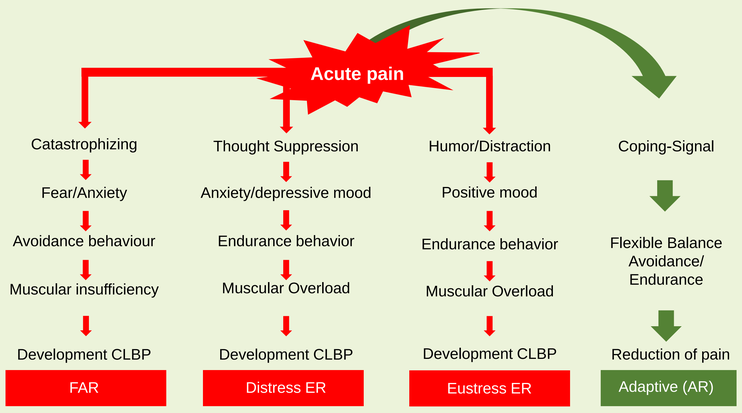

Figure 1. The avoidance-endurance model of pain (Hasenbring, 2000).

Sample and measures

- 284 LBP patients differing in their competitive sports level (180 athletes, 104 non-athletes), consecutively recruited in outpatient physiotherapy settings
- Subscales Thought Suppression (TSS) and Behavioral Endurance Scale (BES) of the Avoidance-Endurance-Questionnaire (AEQ) and depression (7-item Beck Depression Inventory-Primary Care, BDI-PC) differentiated between the four AEM subgroups
- Average LBP intensity last week (Numerical Rating Scale 0-10)
- Disability (von Korff Disability Score 0-100)
- Training frequency (hours per week)

Statistics

- Two univariate analyses of variance (ANOVA) were performed with “group” (athletes/non-athletes), “coping” (4 AEM subgroups) and “age” (<30/≥30) as factors, sex and training intensity as covariates and pain outcomes (intensity, disability) as dependent variables.
- Bonferroni post hoc tests were calculated exploring single group differences.

Results

Athletes and non-athletes with back pain did not differ in the mean level of pain intensity, disability and stage of chronicity. Both groups further did not differ in the relative frequency of the AEM subgroups: the DER and EER patients represented the largest subgroups, followed by adaptive and fear-avoidance coping (Table 1).

Table 1. Means (and standard deviations) of sample characteristics and division of pain response patterns.

	Age (years)	Training intensity (hours)	Pain intensity	Disability	Relative frequency of AEM subgroups			
					DER	FAR	EER	AR
athletes (71 female)	28.64 (9,64)	9.18 (5.59)	3.73 (1.76)	21.51 (18.51)	0.35	0.14	0.36	0.15
non-athletes (54 female)	42.50 (14.09)	3.98 (2.76)	3.72 (2.15)	26.40 (20.54)	0.32	0.10	0.35	0.22

Regarding pain intensity, the three-factorial ANOVA revealed a significant main effect of coping (p = .001) and a significant group x coping interaction (p = .004). AEM subgroups in non-athletes therefore showed differences in pain intensity with higher scores in the DER compared to the AR patients. In contrast, the athletes as a whole did not reveal AEM group differences in pain (Figure 2). A main effect of age showed boundary significance (p = .091). There were no other significant main effects or interactions. However, after splitting up the population by median age, we found a significant group x coping interaction in the younger patients and a significant main effect of coping in the older patients (Figure 3).

With respect to disability, the three-factorial ANOVA revealed a significant main effect of coping (p = .000) and a significant interaction of group x coping (p = .018). AEM subgroups in non-athletes displayed higher scores in the DER compared to the AR patients. On the contrary, the athletes revealed a different pattern with both the DER and FAR subgroup showing highest scores in disability (Figure 2). No other main effects or interactions reached statistical significance.

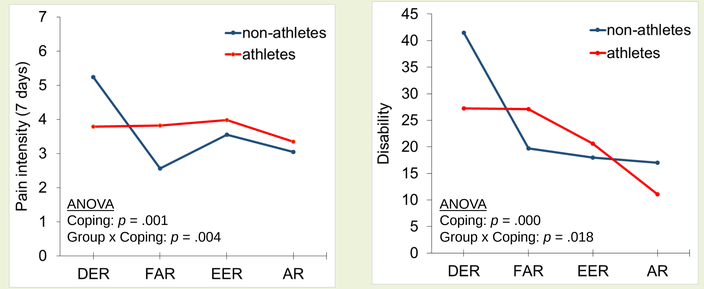

Figure 2. Results of the three-factorial ANOVA (sex and training intensity as covariates), calculating effects for group, coping, age, and group x coping, group x age, coping x age and group x coping x age interactions with disability as dependent variable. Only significant effects are shown.

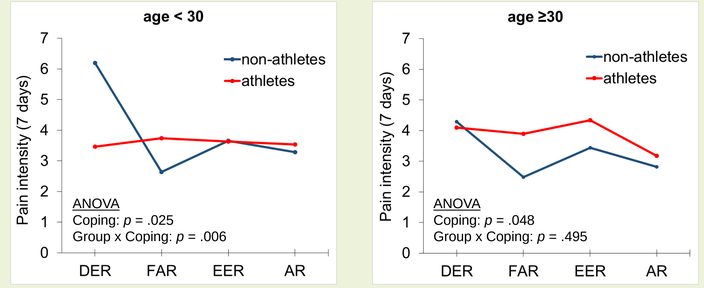

Figure 3. Results of two-factorial ANOVAs (sex and training intensity as covariates), calculating effects for group, coping and group x coping interaction with mean pain intensity of the last 7 days as dependent variable, separated by median age. Only significant effects are shown.

Conclusions

- Pain-related coping responses have been shown to modulate pain intensity and disability in low back pain patients[1].
- With respect to pain intensity, non-athletes showed the expected subgroup differences independent of age, whereas in athletes this pattern was only present in older ones. Lacking comparable subgroup differences in pain intensity in younger athletes indicate possible differences in pain processing. The results suggest the need for greater emphasis on age as a regulating factor of pain in maladaptive coping in athletes.
- Regarding disability, coping strategies seem to play a comparable role in athletes and non-athletes. The FAR groups seem to benefit from physiotherapy, while the DER groups don’t.

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