**Supplementary material III**

**Table S13.** Population characteristics (demographic and anthropometric) that do not pose a risk or do not contribute to pain.

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| **Anatomic location of pain** | **Variable** | **Timeframe/ Details** | **Not risk factors (no correlation)** | **Not contributing factors** |
| **All body** | Prevalence | Point | Age (*p*=0.114) [21] |  |
| Intensity | | Age (*p*=0.885) [21] |  |
| Previous injury (perceived pain) (*p*=0.781) [21] |
| **Back** | Prevalence | Lifetime |  | Sex [20] |
| Age [20] |
| Frequency | | Sex (*p*>0.46) [33] |  |
| Intensity | |  | Sex [20] |
| Age [20] |
| Disability | |  | Sex [20] |
| Age [20] |
| **Lower back** | Prevalence | Lifetime | Sex (*p>*0,409) [27] | BMI [27] |
| Height (*p>*0,884) [27] |
| Practicing other sports (*p>*0,6) [27] |
| Point | Incipient disk degeneration (*p*=0.73) [25] |  |
| One year | Sex (*p*=0.243) [26] |  |
| Sex (*p>*0,293) [27] |
| Practicing other sports (*p*=0.210) [26] |
| Practicing other sports (*p>*0,052) [27] |
| Age (*p*=0.061) [26] |
| Age (*p*=0.702) [28] |
| Age (*p*=0.840) [29] |
| BMI (*p*=0.178) [26] |
| BMI (*p*=0.457) [28] |
| BMI (*p*=0.615) [29] |
| BF% (*p*=0.626) [29] |
| Height (*p>*0,839) [27] |
| Height (*p*=0.282) [28] |
| Height (*p*=0.881) [29] |
| Weight (*p>*0,962) [27] |
| Weight (*p*=0.934) [28] |
| Weight (*p*=0.775) [29] |
| Asymmetry of ROM in dominant and non-dominant limb (HE, HAD-HF, HAB, HIR, HF-KF) (*p*<0.04) [28] |
| Asymmetry of ROM in dominant and non-dominant limb (HE, HAB, HIR HAB-HF) (*p*<0.017) [29] |
| Asymmetry of trunk muscle endurance in dominant and non-dominant limb (ISBE) (*p*=0.024) [28] |
| Chronic | Sex (*p>*0,612) [27] | Weight [27] |
| Age (*p>*0,750) [27] |
| Disability | Scores | Sex (*p*=0.304) [26] |  |
| Age class (*p*=0.309) [26] |
| BMI category (*p*=0.065) [26] |
| Dysfunctional/ Functional | Sex (*p*=0.171) [26] |  |
| Practicing other sports (*p*=0.499) [26] |
| BMI (*p*=0.075) [26] |
| Disk degeneration | DDD | BMI category (*p>*0.79) [25] |  |
| Trunk/ Leg-length coefficient (*p>*0.73) [25] |

BMI – Body mass index; BF% - Body fat percentage; ROM – Range of motion; HE – hip extension test (iliopsoas); HAD-HF – Hip adduction with hip flexed test (piriformis); HAB – Hip abduction with hip neutral test (adductors); HIR – Hip internal rotation test (external rotators); HF-KF – Hip flexion with knee flexed test (gluteus maximus); ISBE – Isometric side bridge endurance (trunk lateral flexors); HAB-HF – Hip abduction with flexed hip (monoarticular adductors); DDD – Degenerative disk disease;

**Table S14.** Exposure characteristics (related with Equestrianism) that do not pose a risk or do not contribute to pain.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Anatomic location of pain** | **Variable** | **Timeframe/ Details** | **Not risk factors (no correlation)** | **Not contributing factors** |
| **All body** | Prevalence | Point |  | Injuries resulting from falls – 57% [22] |
| **Back** | Prevalence | Lifetime | Level of competition (Professionals>amateurs) (*p*>0.05) [20] | Years riding [20] |
| Equestrian discipline (*p*>0.05) [20] | Workload (H/day) [20] |
| Point |  | Years riding (riders w/ postural defects) [24] |
| Equestrian discipline [33] |
| Performance classes [33] |
| Workload (h/ week) [33] |
| Jumping (86.3 % did not affect BP or improved complaints) [33] |
| Frequency | |  | Workload (h/week) [33] |
| Equestrian discipline [33] |
| Intensity | | Level of competition (Professionals>amateurs) (*p*>0.05) [20] | Years riding [20] |
| Workload (H/day) [20] |
| Equestrian discipline [33] |
| Equestrian discipline (*p*>0.05) [20] | Workload (h/week) [33] |
| Disability | | Level of competition (Professionals>amateurs) (*p*>0.05) [20]  Equestrian discipline (*p*>0.05) [20] | Years riding [20]  Workload (H/day) [20] |
| **Lower back** | Prevalence | Lifetime | Workload (*p>*0,567) [27] | Sport license [27] |
| Years riding [27] |
| Point |  | Workload h/week [25] |
| One year | Equestrian sports being a profession vs hobby (*p*=0.087) [26] |  |
| Equestrian discipline (*p*=0.59) [26] |
| Rider warming up before riding (*p*=0.151) [26] |
| Years riding (*p*=0.245) [26] |
| Years riding (*p*=0.557) [28] |
| Years riding (*p*=0.604) [29] |
| Workload H/Week (*p*>0,491) [27] |
| Workload H/Week (*p*=0.089) [28] |
| Workload H/Week (*p*=0.148) [29] |
| Workload H/Year (*p*=0.089) [28] |
| Workload H/Year (*p*=0.148) [29] |
| Chronic | Sport license (*p>*0,178) [27] | Equestrian discipline [27] |
| Intensity | |  | Equestrian discipline [25] |
| Workload h/week [25] |
| Disability | Scores |  | Equestrian discipline [25] |
| Dysfunctional/ Functional | Workload (*p*=0.276) [26] |  |
| Performing stable duties (*p*=0.077) [26] |
| Rider warming up before riding (*p*=0.948) [26] |
| Years riding (*p*=0.241) [26] |
| Disk degeneration | T2-Weighted signal intensity | Being an Equestrian athlete (*p>*0.46) [25] |  |
| DDD | Equestrian discipline (*p>*0.15) [25] |  |

H/day – hours per day; H/Week – hours per week; H/ Year – hours per year; BP – back pain;

**Table S15.** Population characteristics (demographic and anthropometric) that pose a risk or contribute to pain.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Anatomic location of pain** | **Variable** | **Timeframe/ Details** | **Risk factors (correlation)** | **Contributing factors** |
| **All body** | Prevalence | Point | Age (positive correlation, no *p* values given) [31] | Not practicing other sports (O.R. 1,4) [31] |
| Sex (female) (*p*=0.006) [21] |
| **Back** | Prevalence | Lifetime | Lower scores in the in-line lunge test (FMS) (*p*=0.022) [20] |  |
| Lower scores in the rocking backwards test (MC) (*p*=0.014) [20] |
| Point | Age (100% incidence in population 40-45 y.o.) [32] | Age (average age of riders w/ no BP lower than those with frequent symptoms) [33] |
| Pain location and sex (*p*<0.001) [32] |
| One month | Lower scores in the rotary stability test (FMS) (*p*=0.04) [20] |  |
| Lower scores in the rocking forwards test (MC) (*p*=0.02) [20] |
| Intensity | | Lower scores in movement control (MC) (*p*=0.001) [20] |  |
| Lower scores in functional movement (FMS) (*p*=0.024) [20] |
| Disability | | Lower scores in movement control (MC) (*p*=0.006) [20] |  |
| Lower scores in functional movement (FMS) (*p<*0.001) [20] |
| **Lower back** | Prevalence | Lifetime | Younger age (*p*>0.000) [27] |  |
| Weight (*p*>0.003) [27] |
| Point | Pain location and sex (*p*<0.001) [32] |  |
| One year | Younger age (*p*>0.000) [27] |  |
| BF% (*p*=0.01) [28] |
| Lower values in trunk muscle endurance (ISBE\_ND, ISBE) (*p<*0.039) [28] |
| Higher values in ROM (HTR) (*p=*0.043) [28] |
| Lower values in ROM (HAD-HF, KF) (*p*<0.025) [29] |
| Disability | Scores | BMI (*p*=0.016) [26] |  |
| Dysfunctional (as opposed to Functional) | Older age (*p*=0.022) [26] |  |

O.R. – Odds ratio; BF% - Body fat percentage; FMS – Functional movement screening tests; MC - Luomajoki’s Motor Control screening tool; ISBE -Isometric side bridge endurance (trunk lateral flexors); ISBE\_ND – Isometric side bridge endurance in non-dominant side (trunk lateral flexors); ROM – Range of motion; HTR – Hip total rotation (hip rotators); HAD-HF – Hip adduction with flexed hip (abductors); KF – Flexion of knee (quadriceps); y.o. – years old.

**Table S16.** Exposure characteristics (related with Equestrianism) that pose a risk or contribute to pain.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Anatomic location of pain** | **Variable** | **Timeframe/ Details** | **Risk factors (correlation)** | **Contributing factors** |
| **All body** | Prevalence | Point | Years riding (*p*=0.004) [21] | Saddle – 62% [22] |
| Nº of horses ridden – 22% [22] |
| Horse’s movement – 14% [22] |
| Cold weather – 2% [22] |
| Years riding, riding for <11 y. leads to < O.R. [31] |
| Level of competition (O.R. – leisure 5,46 < amateur 6,30 < professional 7,22) [31] |
| Equestrian discipline (eventing) – 96% [21] |
| Chronic |  | Equestrian discipline (Competitive SJ only 2.2 O.R.> Competitive SJ and others 1.5 O.R. (Chronic pain: acute pain)) [23] |
| Intensity | |  | Weather (no further explanation) – 41,3% [31] |
| Riden activities – 72.8% [31] |
| Stable duties – 27.2% [31] |
| **Back** | Prevalence | Point |  | Competition level (riders w/ postural defects) [24] |
| Riding (91.5% developed BP during riding career regardless of riding discipline) [33] |
| One month | Level of competition (Professional> Amateur) (*p*=0.014) [20] |  |
| Saddle type (Jumping saddle> Dressage saddle> Jumping and Dressage saddle) (*p*=0.027) [20] |
| **Lower back** | Prevalence | Lifetime | Equestrian discipline (Show jumping, Dressage, country riding, reigning, and Eventing) (*p<0.001*) [27] |  |
| One year | Workload over 7h/ week (*p*=0.045) [26] |  |
| Equestrian sports being a profession vs hobby (*p*=0.039) [26] |
| Performing stable duties (*p*=0.029) [26] |
| Chronic | Workload (5-6 hours) (*p*>0.017) [27] |  |
| Workload (13-18 hours) (*p*>0.027) [27] |
| Workload (>19 hours) (*p*>0.043) [27] |
| Intensity | |  | Riding – 42,5% [26] |
| Cleaning/ grooming horses – 27,1% [26] |
| Lunging horses – 26,2% [26] |
| “Mucking out” – 55,1% [26] |
| Disability | Scores | Equestrian sports being a profession vs hobby (*p*=0.017) [26] | Performing stable duties (higher values of estimated marginal means, age and BMI fixed at mean values) [26] |
| Dysfunctional (as opposed to Functional) | Equestrian sports being a profession vs hobby (*p*=0.041) [26] |  |
| Disk degeneration | T2-Weighted signal alterations |  | Equestrian discipline (Dressage) [25] |

O.R. – Odds ratio.