| Supplementary table Study characteristics of the included studies. | | | | | | |
| --- | --- | --- | --- | --- | --- | --- |
| Reference | Subjectsa | Sport | Type of Exertion  Duration  Intensity | Performance test and Biochemical marker | Time | Main Findings |
| Andersson *et al95* | Female  Elite  23 ± 4 | Soccer | Simulated  Match  2x 45 min, 15 min rest  HR: 162 ± 2 bpm | Blood samples (Glucose, leukocytes, lymphocytes, neutrophils, cytokines) | Pre, 15 min, 21, 45 and 69h post | Increased leukocytes and cytokines for 21h. Neutrophils increased at post-measurement. |
| Chatzinikolaou *et al19* | -  Elite  22.8 ± 1.4 | Handball | Simulated Match  2x 30 min  HR: 163.4 ± 7.6 and 168.7 ± 8.1 bpm | Blood samples (La, glycerol, C, T, MDA, PC, CK, UA, NEFA, ammonia, leukocytes, IL-1β, IL-6, GSH, sVCAM-1, GSSG, GPX), jumping, sprint ability, agility, line-drill testing and strength | Pre-match, post and daily during following 6 days | La, glycerol, NEFA, ammonia, leukocytes, IL-1β, IL-6, C, MDA and PC increased at post-measurement. Jumping, speed, agility, line-drill testing, strength, knee ROM and GSH decreased for 24h. CK, CRP, UA, sVCAM-1, GSSG and GPX increased for 24h. |
| Coad *et al43* | Male  Elite  21.8 ± 2.4 | Australian Rules Football | 3 Matches  4x 30 min  Player load:  1095.97 ± 90.44  1081.96 ± 115.05  1266.00 ± 124.57 | s-IgA | 24 and 1h pre, 1, 12, 36 and 60h post | Main effects between 24-hour pre-match and post-match [s-IgA] were found in matches 2 and 3. |
| Cormack *et al20* | -  Elite  23.3 ± 2.7 | Australian Rules Football | Match  80.0 ± 12.0 min  - | CMJ1, CMJ5, saliva samples (C, T and T:C) | 48h pre, pre-match, post and 24, 72, 96 and 120h post | CMJ1 Flight time: Contraction time decreased substantially post-match and appears most useful monitoring neuromuscular status. |
| Cunniffe *et al33* | -  Elite  26.4 ± 0.7 | Rugby | Match  69 ± 0.9 min  - | Blood samples (C, T:C, CK, CRP, IL-6, circulating T lymphocytes, NK cells and neutrophils) | Camp entry, morning of the match, post, 14 and 38 post | C and IL-6 increased immediately post. CK and CRP increased for 14 and 38h. Circulating T lymphocytes, NK cells and neutrophils decreased immediately post. T:C decreased for 14h. |
| Djaoui *et al34* | Male  Elite  26.0 ± 2.0 | Soccer | 2 Matches  2x 45 min per match | CK and La | Pre, 24 and 48h post | CK increased for 24h. |
| Duffield *et al21* | Male  Amateur  20.3 ± 2.3 | Rugby | Match  -  RPE: 6 ± 2 | CMJ, MVC, Voluntary activation, Pt, RTD, RR | Pre, post and 2h post | Pt, RTD and RR decreased immediately post. MVC decreased for 2h. |
| Elloumi *et al42* | Elite  25.2 ± 4.2 | Rugby | Match  -  - | C, T and T:C ratio | Pre and during 6 days post-match | C increased for 4h. T:C increased for 120h. |
| Fatouros *et al22* | Male  Elite  20.3 ± 0.3 | Soccer | Match  2x 45 min  HR: 168.6 ± 8.2 bpm | Blood samples (leukocytes, CK, UA, PC, MDA, GSH, GSSG, GSH/GSSG, TAC, TBARS, Catalase, GPX), CMJ and sprint ability | Pre, 24, 48 and 72h post | Performance deteriorated throughout recovery. Leukocytes increased for 24h, CK for 48 h. TBARS, PC, UA, GPX and TAC increased throughout recovery. |
| Gravina *et al35* | Female  Elite and sub-elite  Elite: 25 ± 5 Sub-Elite: 18.3 ± 1.5 | Soccer | Match  -  - | Blood samples (LDH, UA, T, CK, CRP, neutrophils, albumin, TAS, leukocytes, lymphocytes, eosinophils, monocytes and basophils). | 24h pre, post and 18h post | Leukocytes, neutrophils, LDH, UA, albumin, TAS and T increased immediately post. Lymphocytes, eosinophils, monocytes and basophils decreased immediately post. CK increased for 18h. |
| Hoffman *et al30* | Female  NCAA Division 3  Starters: 20.0 ± 1.0 Non-Starters: 18.2 ± 0.4 | Soccer | Match  -  - | Squat jump and CMJ | 24h pre, post and 24h post | Squat jump and CMJ decreased for 24h. |
| Ispirlidis *et al23* | Male  Elite  21.1 ± 1.2 | Soccer | Match  68 min  HR: 159.7 ± 4.1 bpm | Performance and blood samples (C, T, CK, CRP, LDH, PC, UA, IL-6, leukocytes, cytokines and TBARS) | Pre, post and during 6 following days | Performance decreased for 24-96h. Leukocytes, cytokines and C increased immediately post. CRP, TBARS increased for 48h. CK, LDH and PC increased for 72h and UA for 96h. |
| Kraemer *et al36* | -  NCAA Division 1  20 ± 1 | American Football | Game  -  - | Blood samples (CK, C, T, T:C, Mb and LDH) | Pre, 18-20h and 42-44h post | CK and Mb increased for 18h. LDH increased for 42h. |
| McLellan *et al37* | Male  Elite  24.2 ± 7.3 | Rugby | Match  60-80 min  - | Blood samples (CK and C) | 24h pre, 30 min pre, 30 min post and 24, 48, 72, 96 and 120h post | C increased for 96h. CK increased through complete recovery period. |
| McLellan *et al38* | Male  Elite  19.0 ± 1.3 | Rugby | Match  60-80 min  Covered Distances:  Backs: 5747 ± 1095m  Forwards: 4774 ± 1186m | Blood samples (CK, C, T and T:C) | 24h pre, 30 min pre, 30 min post and daily during the 5 following days | T decreased immediately post. C increased for 24h. CK increased through complete recovery period. |
| McLellan *et al31* | Male  Elite  24.2 ± 7.3 | Rugby | Match  60-80 min  Covered Distances:  Backs: 7886 ± 1695m  Forwards: 7462 ± 1566m | PRFD, peak power, peak force of CMJ | 24h and 30 min pre, 30 min post and 24, 48, 72, 96 and 120h post | RFD and peak power decreased to 24h post. Peak force decreased to 30 min post. |
| Nédélec *et al24* | -  Elite  21.8 ± 3.2 | Soccer | Match  2x 45 min  - | CMJ, MVC and blood samples (CK) | Pre, 24, 48 and 72h post | CMJ, MVC and CK decreased through complete recovery period. |
| Pliauga *et al25* | Male  College level  21.5 ± 1.7 | Basketball | Simulated Match  4x 10 min  - | Blood samples (CK), CMJ, sprint ability and body temperature | Pre, 20 min post, 24 and 48h post | CMJ decreased at 24h post. CK increased through complete recovery period. |
| Rampinini *et al32* | Male  Elite  19 ± 1 | Soccer | Match  2x 45 min  88.0 ± 4.1% and 96.3 ± 2.8% of HRmax | MVC and sprint ability. | Pre, post, 24 and 48h post | MVC and sprint ability decreased immediately post. |
| Romagnoli *et al26* | Male  Professional  17-20 | Soccer | Match  2x 45 min  88 ± 4% and 82 ± 4% of HRmax | Blood samples (WBC, lymphocytes, neutrophils, monocytes, CK, CRP, C, T, IL-6) and CMJ | Pre, 30 min post, 24 and 48h post | CMJ decreased and CK increased for 48h. C and T decreased for 48h. |
| Russel *et al39* | Male  Professional  Under-21 | Soccer | 4 matches  2x 45 min per match  - | CK and CMJ | Pre, 24 and 48h post | CK increased and peak power output decreased for 48h. |
| Russel *et al6* | Male  Professional  20 ± 1 | Soccer | 5 matches  2x 45 min per match  - | CK and CMJ | Pre, 24 and 48h post | CK increased and peak power output decreased for 48h. |
| Silva *et al10* | Male  High-Level  22-31 | Soccer | Match  94 min  - | Sprint ability, CMJ and blood samples (Mb, CRP, UA, C, T, T:C, CK, MDA, SH, GR, GPX, TAS and SOD) | 72h pre, 24, 48 and 72h post | Mb, CRP, -SH and GR increased for 24h. GPX decreased for 24h. C, CK, TAS, SOD and MDA increased for 48h. T decreased for 48h. |
| Souglis *et al40* | Male and Female  Elite  Male:23.1 ± 3.0  Female: 22.9 ± 2.4 | Soccer | 3 matches  2x 45 min per match  Male: 86.9 ±4.3% of HRmax  Female: 85.6 ± 2.3% of HRmax | Blood samples (IL-6, TNF-α, CRP, CK) | Pre, post, 24h and 48h post | IL-6 and TNF-α increased and returned to baseline within 24h. CRP decreased within 48h. CK increased for 48h. |
| Takarada41 | -  Elite-Amateur  26.6 ± 0.7 | Rugby | Match  -  - | Blood samples (CK and Mb) | Pre, post and 24h post | Mb increased for 24h. CK increased through complete recovery period. |
| Twist & Sykes27 | Male  Club Level  23.5 ± 2.3 | Rugby | Simulated match  2x 43 min  87 ± 3 and 83 ± 4 % of HRmax | Knee torque, CMJ and CK | Pre, post, 24 and 48h post | CK increased for 24h. Peak knee flexor torque decreased for 24h. Peak knee extensor torque and CMJ decreased for 48h. |
| Twist *et al28* | Male  Professional  25.9 ± 5.1 | Rugby | Match  Backs: 80 min and Forwards: 50.7 min  - | CMJ and CK | Pre, 24 and 48h post | CMJ decreased for 14h. CK increased through complete recovery period. |
| West *et al29* | Male  Elite  24.9 ± 4.4 | Rugby | Match  -  - | CMJ, blood samples (C, T and T:C) | 36h pre, 12, 36 and 76h post | CMJ, T and T:C decreased for 36h. C increased for 36h. |

*C* cortisol,*CK* creatine kinase, *CMJ* counter movement jump, *CRP* c-reactive protein, *GPX* glutathione peroxidase activity, *GR* reductase, *GSH* reduced glutathione, *GSSG* oxidized glutathione, *HR* hearth rate, *HRmax* maximum heart rate, *IL-1β* interleukin-1β, *IL-6* interleukin-6, *La* lactate, *LDH* lactate dehydrogenase, *Mb* myoglobin, *MDA* malondialdehyde, *MVC* maximum voluntary contraction, *NEFA* nonesterified fatty acids, *PC* protein carbonyls, *Pt* evoked twitch contractile properties of peak twitch force, *PT* maximal isometric peak torque, *PRFD* peak rate of force development, *RR* contraction duration and relaxation rate, *RTD* rate of torque development, *SH* sulfhydryl, *SOD* superoxide dismutase, *sVCAM-1* soluble vascular adhesion molecule 1, *T* testosterone, *TAC* total antioxidant capacity, *TAS* total antioxidant status, *TBARS* thioburbituric acid-reactive substances, *TNF-α* tumor necrosis factor alpha, *UA* uric acid, *s-IgA* Salivary Immunoglobulin A, *WBC* white blood cell count.

a Ages are presented in Mean ± SD, actual or range