**Core Sleep markers**

|  |
| --- |
| COMT (rs4680) |
| PER3 VNTR |
| CLOCK (rs1801260) |
| BDNF (rs6265) |
| PPARGC1A (rs8192678) |
| ACTN3 (rs1815739) |
| NOS3 (rs1799983) |
| TPH2 (rs 45706250) |
| GABRA6 (rs3219151) |
| **GSK3B** |
| PER2 |

|  |  |
| --- | --- |
| **BDNF** | **rs6265** |
| **CLOCK** | rs1801260 |
| **FKBP5** | rs1360780 |
| **GABRA6** | rs3219151 |
| **MAO-A** | rs6323 |
| **PER3** | rs228697 |
| **TPH2** | rs4570625 |

**Mental Health**

|  |
| --- |
| COMT (rs4680) |
| SLC6A4 5-HTTLPR |
| TPH2 (rs4570625) |
| BDNF (rs6265) |
| MAO-A (rs6323) |
| FKBP5 (rs1360780) |
| GABRA6 (rs3219151) |
| HTR1A (rs6295) |
| OXTR (rs53576) |

**Cardiovascular markers**

|  |
| --- |
| APOE (ε genotype) |
| NOS3 (rs1799983) |
| ACE (I/D) |
| AGT (rs699) |
| ADRB2 (rs1042713) |
| MTHFR C677T (rs1801133) |
| LPA (rs3798220) |
| CRP (rs1205) |

**Metabolic Health**

|  |
| --- |
| TCF7L2 (rs7903146) |
| PPARG (rs1801282) |
| FTO (rs9939609) |
| MC4R (rs17782313) |
| ADIPOQ (rs266729) |
| SLC2A2 (rs5400) |
| MTNR1B (rs10830963) |

GCK (rs1799884)

**Muscle building**

|  |
| --- |
| ACTN3 (rs1815739) |
| ACE (rs1799752) |
| MYH7 / MYH2 (panel) |
| MSTN (rs1805086) |
| FST (rs11764843) |
| ACVR2B (panel) |
| IGF1 (rs35767) |
| COL1A1 (rs1800012) |
| COL5A1 (rs12722) |
| VDR FokI (rs2228570) |
| VDR TaqI (rs731236) |
| AR (CAG repeats) |
| CYP19A1 (rs2470152) |
| SHBG (rs6259) |
| IL6 (rs1800795) |
| TNF (rs1800629) |
| SOD2 (rs4880) |

**Knee injury Risk**

|  |
| --- |
| COL1A1 (rs1800012) |
| GDF5 (rs143383) |

**Achilles Tendonitis Risk**

COL5A1 (rs12722

**Bone and Joint Health Risk**

|  |
| --- |
| COL6A4P1 (panel) |
| IL1R1 (rs2234650) |
| MCF2L (rs11842874) |
| VDR FokI (rs2228570) |
| VDR TaqI (rs731236) |
| CYP2R1 (rs10741657) |
| NADSYN1 (rs12785878) |
| GC haplotype (rs7041+rs4588) |

**Lower Back Pain risk**

|  |
| --- |
| CILP (rs2073711) |
| COL11A1 (rs1676486) |
| COL9A3 (Trp3) |

**Soft tissue Injury Risk**

|  |
| --- |
| AMPD1 |
| GDF5 (rs143383) |
| INS-IGF2 |

**General Injury risk**

|  |
| --- |
| Col 5A1 |
| GDF5 (rs143383) |
| Col 1A1 (rs1900012) |

**Inflammatory / Infection Response**

|  |  |  |  |
| --- | --- | --- | --- |
| IL6 (rs1800795) | | | |
| TNF (rs1800629) | | | |
| TLR4 (rs4986790) | | | |
| HLA-DQA1 Risk haplotype | | | |
| HLA-DQB1 Risk haplotype | | | |
| HLA-DRB1 Risk haplotype | | | |
| PON1 (rs662) | | | |
| SH2B3 (rs3184504) | | | |
| PTPN22 (rs2476601) | | | |
| SLC23A1 (rs33972313) | | | |
| GPX1 (rs1050450) | | | |
| FOXO3 (rs2802292) | | | |
| IL1B (rs16944) | | | |
| IRF5 (rs2004640) | | | |
| SOCS2 (rs3782415)  CRP    GSTA1 B (**s3957356**, **rs3957357**, and **rs3957358**        IL17A (rs2275913)    IL1A (rs17561)    IL1A (rs1800587)    IL1B (rs1143634)    IL1B (rs16944)    IL1RN (rs419598)    HMOX1 (rs2071746) | | | |
| GSTA1 B (**s3957356**, **rs3957357**, and **rs3957358** |  |  |  |
| IL17A (rs2275913)    **IL1A (rs17561)**    **IL1A (rs1800587)**    **IL1B (rs1143634)**    **IL1B (rs16944)**    **IL1RN (rs419598)**    **HMOX1 (rs2071746)** |  |  |  |
|  |  |  |  |
|  |  |  |  |

**Anxiety risk**

|  |
| --- |
| COMT (rs4680) |
| SLC6A4 |
| TPH2 |
| BDNF (rs6265) |
| MAO-A (rs6323) |

|  |  |
| --- | --- |
| **BDNF** | **rs6265** |
| **COMT** | rs4680 |
| **FKBP5** | rs3800373 |
| **HTR1A** | rs6295 |
| **IL1B** | rs1143624 |
| **IL1B** | rs16944 |
| **OPRM1** | rs1799971 |
| **OXTR** | rs53576 |

**Methylation Pathways**

|  |
| --- |
| MTHFR C677T (rs1801133) |
| MTHFR A1298C (rs1801131) |
| MTRR A66G (rs1801394) |
| MTR A2756G (rs1805087) |
| BHMT-02 (+52C>T)  CBS C699T (rs234706) |
|  |
| SHMT1 C1420T (rs1979277) |
| PEMT G523A (rs7946) |
| SLC19A1 A80G (rs1051266) |
| TCN2 C776G (rs1801198) |
| MTHFD1 1958G>A (rs2236225) |
| FUT2 G428A (rs601338) |
| MAT1A (panel tag)  NOS3.  TPH2  VDR Taq1  GSTM 1 (rs1065411)  GSTP1 (rs1695)  GSTT1 (rs2266637) |

**Supplementation Focus and combination**

|  |  |  |  |
| --- | --- | --- | --- |
| L-5-MTHF (methylfolate) | MTHFR 677 T/T, 1298 C/C, MTHFD1 A/A, or SLC19A1 G/G | Heterozygous at any above | Protective genotypes & normal labs |
| Methyl-B12 (methylcobalamin) | MTRR G/G, MTR G/G, TCN2 G/G, or FUT2 A/A | Hets at any above | No risk & normal MMA/holo-TC |
| Riboflavin (B2) | MTHFR 677 T/T | C/T | C/C |
| P5P (B6) | CBS A/A or SHMT1 A/A | Hets | Low risk + normal homocysteine |
| Choline / PC | PEMT T/T or MTHFR 677 T/T | Hets | Low risk & adequate intake |
| Betaine (TMG) | BHMT T/T or MTHFR 677 T/T | Hets | Low risk + normal homocysteine |
| Creatine (methyl-sparing) | Any MTHFR/MTRR/MTR risk or high load | Moderate risk | Low risk |
| Folinic acid | SLC19A1 G/G or folate intolerance | — | — |
| Vitamin D3 + K2 | VDR/CYP2R1/NADSYN1/GC risk or low labs | — | — |
| Magnesium | COMT AA or high stress | — | — |
| Glycine | SHMT1 A/A or high methionine intake | — | — |
| Taurine & Molybdenum | CBS A/A with sulfur sensitivity | — | — |

**Concussion Risk**

|  |
| --- |
| APOE (ε genotype) |
| MTHFR C677T (rs1801133) |

PEMT (rs7946)

**Oxidative Stress**

|  |
| --- |
| SOD2 (rs4880, Val16Ala) |
| GCLC (panel) |
| SOD3 (panel) |
| NQO1 (rs1800566, C609T)  CAT (rs1001179).    GPX1(rs1050450)    GSTM1((rs1065411)    OGG1(rs1052133)    EPHX1(rs1051740) |

**Heart Rate Variability/Autonomic Stress**

HRV

|  |
| --- |
| ADRB1 (rs1801253) |
| ADRB2 (rs1042713) |
| ACE (rs1799752, I/D) |
| NOS3 (rs1799983) |
| CHRM2 (panel) |
| RGS6 (panel) |

**Caffeine Metabolism**

|  |
| --- |
| CYP1A2 (rs762551, -163 C>A) |
| AHR (rs4410790) |
| POR (rs1057868, A503V) |
| ADORA2A (rs5751876) |

**Airway and Allergy**

**Histamine and Athletic Performance**

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | ADRB2 | | rs1042713 | | G/G (Arg16) | | A/G | | A/A (Gly16) |
|  |  | |  | |  | |  | |  |
|  | ADRB2 | | rs1042714 | | C/C (Gln27) | | C/G | | G/G (Glu27) |
|  | IL4 | | rs2243250 | | T/T | | C/T | | C/C |
| IL13 | | rs20541 | | A/A (Gln/Gln) | | A/G | | G/G (Arg/Arg) | |
|  | IL13 | | rs1800925 | | T/T | | C/T | | C/C |
|  | FCER1A | | rs2251746 | | T/T | | C/T | | C/C |
|  | TSLP | | rs1837253 | | C/C | | C/T | | T/T |
|  | FLG | | rs61816761   / rs558269137 | | LoF homozygous | | LoF carrier | | Wild type |
|  | HRH1 | | rs901865 | | C/C | | C/T | | T/T |
|  | HRH4 | | rs11662595 | | G/G | | A/G | | A/A |

**Histamine Breakdown**

|  |  |  |  |
| --- | --- | --- | --- |
| Genetic marker (gene / rsid / assay)    DAO(rs10156191)  **AOC1**    HNMT rs11558538      ALDH2(rs671)        **Compounding factors** | High risk      A/A      TT        A/A | Intermediate      A/G      C/T        A/G | Low risk      G/G      C/C        G/G |
| **Histamine clearance** (DAO, HNMT, HDC, ALDH2) | DAO rs10156191 AA; HNMT rs11558538 TT; HDC ↑; ALDH2 rs671 A allele | DAO AG; HNMT CT; mixed alleles | DAO GG; HNMT CC; ALDH2 GG |
| **Airway / Allergy** (ADRB2, IL4, IL13, FCER1A, TSLP, FLG, HRH1/4) | ADRB2 Arg16 homozygous; IL13 risk alleles; FCER1A high IgE; FLG LoF | Mixed genotypes; mild Th2 bias | Protective ADRB2 alleles; intact barrier genes |

**Altitude Training Response**

|  |  |
| --- | --- |
| **ACE** | **rs4341 (D/D)** |
| **ACE** | rs4341 (I/D) |
| **ACE** | rs4341 (I/I) |
| **ADRB2** | rs1042713 |
| **ADRB2** | rs1042714 |
| **NOS3** | rs2070744 |
| **PPARA** | rs4253778 |

**Blood Clotting Risk**

|  |  |
| --- | --- |
| **F2** | **rs1799963** |
| **F5** | rs6025 |

**Blood Flow and Circulation**

|  |  |
| --- | --- |
| **ACE** | **rs4341 (D/D)** |
| **ACE** | rs4341 (I/D) |
| **ACE** | rs4341 (I/I) |
| **ADRB2** | rs1042713 |
| **ADRB2** | rs1042714 |
| **AGT** | rs699 |
| **BDKRB2** | rs1799722 |
| **NOS3** | rs1799983 |

**Blood pressure Regulation**

|  |  |
| --- | --- |
| **ACE** | **rs4341 (D/D)** |
| **ACE** | rs4341 (I/D) |
| **ACE** | rs4341 (I/I) |
| **ADRB1** | rs1801253 |
| **AGT** | rs699 |
| **NOS3** | rs1799983 |

**Bone Health Density**

|  |  |
| --- | --- |
| **DBP** | **rs2282679** |
| **VDR** | rs731236 |
| **VDR** | rs7975232 |

**Cognitive Memory**

|  |  |
| --- | --- |
| **ANK3** | **rs10994336** |
| **APOE** | Haplotype (ε2/ε2) |
| **APOE** | Haplotype (ε2/ε3) |
| **APOE** | Haplotype (ε2/ε4) |
| **APOE** | Haplotype (ε3/ε3) |
| **APOE** | Haplotype (ε3/ε4) |
| **APOE** | Haplotype (ε4/ε4) |
| **BDNF** | rs6265 |
| **CACNA1C** | rs1006737 |
| **CETP** | rs5882 |
| **DRD2/ANKK1** | rs1800497 |
| **TNF** | rs1800629 |

**Detox Phase 1**

|  |  |
| --- | --- |
| **CYP1A1** | **rs1048943** |
| **CYP1A2** | rs762551 |
| **CYP1B1** | rs1056827 |
| **CYP2A6** | rs1801272 |
| **CYP2D6** | rs1065852 |

**Detox phase 2**

|  |  |
| --- | --- |
| **GSTM1** | **rs1050451 (Null/Deleted)** |
| **GSTM1** | rs1050451 (Present) |
| **GSTP1** | rs1695 |
| **GSTT1** | rs2266637 (Null/Deleted) |
| **GSTT1** | rs2266637 (Present) |
| **NAT2** | rs1208 |
| **NQO1** | rs1800566 |
| **SULT1A1** | rs9282861 |

**Dopamine Reward**

|  |  |
| --- | --- |
| **ANKK1** | **rs1800497** |
| **CACNA1C** | rs1006737 |
| **COMT** | rs4680 |
| **DRD2** | rs1800497 |
| **DRD4** | rs1800955 |

**Endurance Capability**

|  |  |
| --- | --- |
| **ACE** | **rs4341 (D/D)** |
| **ACE** | rs4341 (I/D) |
| **ACE** | rs4341 (I/I) |
| **ACTN3** | rs1815739 |
| **COMT** | rs4680 |
| **CRP** | rs1205 |
| **DRD4** | rs1800955 |
| **HFE** | rs1799945 |
| **PPARA** | rs4253778 |
| **UCP3** | rs1800849 |
| **VEGFA** | rs2010963 |

**Power and Strength**

|  |  |
| --- | --- |
| **ACE** | **rs4341 (D/D)** |
| **ACE** | rs4341 (I/D) |
| **ACE** | rs4341 (I/I) |
| **ACTN3** | rs1815739 |
| **AGT** | rs699 |
| **CKM** | rs8111989 |
| **IL6** | rs1800795 |
| **NOS3** | rs1799983 |
| **PPARA** | rs4253778 |
| **PPARGC1A** | rs8192678 |
| **SOD2** | rs4880 |

**Energy production during Exercise**

|  |  |
| --- | --- |
| **AMPD1** | **rs17602729** |
| **GABPB1** | rs718186 |
| **PPARA** | rs4253778 |
| **PPARGC1A** | rs8192678 |

**Estrogen Metabolism**

|  |  |
| --- | --- |
| **COMT** | **rs4680** |
| **CYP17A1** | rs743572 |
| **CYP19A1** | rs10046 |
| **GSTM1** | rs1065411 (Null/Deleted) |
| **GSTM1** | rs1065411 (Present) |
| **GSTT1** | rs2266637 (Null/Deleted) |
| **GSTT1** | rs2266637 (Present) |

**Gluten Sensitivity**

|  |  |
| --- | --- |
| **TNF** | **rs1800629** |

**Haemochromatosis Risk**

|  |  |
| --- | --- |
| **HFE** | **rs1799945** |
| **HFE** | rs1800562 |

**Lactate Threshold**

|  |  |
| --- | --- |
| **ACTN3** | **rs1815739** |
| **AMPD1** | rs17602729 |
| **PPARGC1A** | rs8192678 |
| **VEGFA** | rs2010963 |

**Salt Sensitivity**

|  |  |
| --- | --- |
| **ACE** | **rs4341 (D/D)** |
| **ACE** | rs4341 (I/D) |
| **ACE** | rs4341 (I/I) |
| **AGT** | rs699 |

**Sex hormone Metabolism**

|  |  |
| --- | --- |
| **COMT** | **rs4680** |
| **CYP1A1** | rs1048943 |
| **CYP1B1** | rs1056836 |
| **SULT1A1** | rs9282861 |

**Insulin Resistance Risk**

Type 2 Diabetes

|  |  |
| --- | --- |
| **KCNJ11** | **rs5219** |
| **PPARG** | rs1801282 |
| **SLC2A2** | rs5400 |
| **TCF7L2** | rs7903146 |

**Vitamin B12 / Pernicious Anaemia**

|  |  |
| --- | --- |
| **FUT2** | **rs602662** |
| **MTR** | rs1805087 |