**Appendix X - Search Strategies**

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| **PubMed - run 8/9/2022**  ("strength training"[all] OR "resistance training"[all] OR "Muscle strength"[all] OR "neck strengthening"[all] OR isometric[all] OR "cervical vertebrae"[all] OR "cervical spine"[all] OR (neck[Mesh] OR neck[all]) OR "cervical strength"[all] OR "Pilates exercises"[all]) AND (rugby[all] OR (rugby[Mesh] OR rugby[all]) OR soccer[all] OR (football[Mesh] OR football[all] OR "football s"[all] OR footballer[all] OR "footballer s"[all] OR footballers[all] OR footballs[all]) OR "football players"[all] OR "rugby players"[all] OR (amateur[all] OR amateurs[all]) OR (elite[all] OR elites[all] OR elitism[all]) OR (professional[all] OR "professional s"[all] OR professionalism[Mesh] OR professionalism[all] OR professionality[all] OR professionalization[all] OR professionalize[all] OR professionalized[all] OR professionalizing[all] OR professionally[all] OR professionals[all])) AND ("brain concussion"[all] OR ("brain concussion"[Mesh] OR (brain[all] AND concussion[all]) OR "brain concussion"[all] OR concussion[all] OR concussions[all] OR concussed[all] OR concussive[all]) OR "brain injuries traumatic"[all] OR "traumatic brain injury"[all] OR TBI[all] OR "chronic traumatic encephalopathy"[all] OR CTE[all] OR "incidence rate"[all] OR "injury rate"[all] OR "random allocation\*"[all] OR "Randomised controlled trial"[all] OR Pre-post[all]) |
| **MEDLINE via Ebsco - run 8/9/2022**  (“strength training” .af. OR “resistance training” .af. OR “Muscle strength” .af. OR “neck strengthening” .af. OR isometric.af. OR “cervical vertebrae” .af. OR “cervical spine” .af. OR (exp neck/ OR neck.af.) OR “cervical strength” .af. OR “Pilates exercises” .af.) AND (rugby.af. OR (exp rugby/ OR rugby.af.) OR soccer.af. OR (exp football/ OR football.af. OR “football s “.af. OR footballer.af. OR “footballer s “.af. OR footballers.af. OR footballs.af.) OR “football players” .af. OR “rugby players” .af. OR (amateur.af. OR amateurs.af.) OR (elite.af. OR elites.af. OR elitism.af.) OR (professional.af. OR “professional s” .af. OR exp professionalism/ OR professionalism.af. OR professionality.af. OR professionalisation.af. OR professionalise.af. OR professionalised.af. OR professionalising.af. OR professionally.af. OR professionals.af.)) AND (“brain concussion “.af. OR (exp “brain concussion”/ OR (brain.af. AND concussion.af.) OR “brain concussion “.af. OR concussion.af. OR concussions.af. OR concussed.af. OR concussive.af.) OR “brain injuries traumatic” .af. OR “traumatic brain injury” .af. OR TBI.af. OR “chronic traumatic encephalopathy” .af. OR CTE.af. OR “incidence rate” .af. OR “injury rate” .af. OR “random allocation\*” .af. OR “Randomised controlled trial “.af. OR Pre-post.af.) |
| **The Cochrane Library for Cochrane Reviews - run 10/9/2022**  (“strength training” OR “resistance training” OR “Muscle strength” OR “neck strengthening” OR isometric OR “cervical vertebrae” OR “cervical spine” OR ([mh neck] OR neck) OR “cervical strength” OR “Pilates exercises”) AND (rugby OR ([mh rugby] OR rugby) OR soccer OR ([mh football] OR football OR “football s” OR footballer OR “footballer s” OR footballers OR footballs) OR “football players” OR “rugby players” OR (amateur OR amateurs) OR (elite OR elites OR elitism) OR (professional OR “professional s” OR [mh professionalism] OR professionalism OR professionality OR professionalisation OR professionalise OR professionalised OR professionalising OR professionally OR professionals)) AND (“brain concussion” OR ([mh “brain concussion”] OR (brain AND concussion) OR “brain concussion” OR concussion OR concussions OR concussed OR concussive) OR “brain injuries traumatic” OR “traumatic brain injury” OR TBI OR “chronic traumatic encephalopathy” OR CTE OR “incidence rate” OR “injury rate” OR (“random” NEXT allocation\*) OR “Randomised controlled trial” OR Pre-post) |
| **CINAHL via Ebsco - run 8/9/2022**  ( (“strength training” OR “resistance training” OR “Muscle strength” OR “neck strengthening” OR isometric OR “cervical vertebrae” OR “cervical spine” OR ((MH neck+) OR neck) OR “cervical strength” OR “Pilates exercises”) AND (rugby OR ((MH rugby+) OR rugby) OR soccer OR ((MH football+) OR football OR “football s” OR footballer OR “footballer s” OR footballers OR footballs) OR “football players” OR “rugby players” OR (amateur OR amateurs) OR (elite OR elites OR elitism) OR (professional OR “professional s” OR (MH professionalism+) OR professionalism OR professionality OR professionalisation OR professionalise OR professionalised OR professionalising OR professionally OR professionals)) AND (“brain concussion” OR ((MH “brain concussion” +) OR (brain AND concussion) OR “brain concussion” OR concussion OR concussions OR concussed OR concussive) OR “brain injuries traumatic” OR “traumatic brain injury” OR TBI OR “chronic traumatic encephalopathy” OR CTE OR “incidence rate” OR “injury rate” OR “random allocation\*” OR “Randomised controlled trial” OR Pre-post) |
| **Web of Science - run 10/9/2022**  (“strength training” OR “resistance training” OR “Muscle strength” OR “neck strengthening” OR isometric OR “cervical vertebrae” OR “cervical spine” OR (neck OR neck) OR “cervical strength” OR “Pilates exercises”) AND (rugby OR (rugby OR rugby) OR soccer OR (football OR football OR “football s” OR footballer OR “footballer s” OR footballers OR footballs) OR “football players” OR “rugby players” OR (amateur OR amateurs) OR (elite OR elites OR elitism) OR (professional OR “professional s” OR professionalism OR professionalism OR professionality OR professionalisation OR professionalise OR professionalised OR professionalising OR professionally OR professionals)) AND (“brain concussion” OR (“brain concussion” OR (brain AND concussion) OR “brain concussion” OR concussion OR concussions OR concussed OR concussive) OR “brain injuries traumatic” OR “traumatic brain injury” OR TBI OR “chronic traumatic encephalopathy” OR CTE OR “incidence rate” OR “injury rate” OR “random allocation\*” OR “Randomised controlled trial” OR Pre-post) |
| **Scopus - run 10/9/2022**  (ALL("strength training") OR ALL("resistance training") OR ALL("Muscle strength") OR ALL("neck strengthening") OR ALL(isometric) OR ALL("cervical vertebrae") OR ALL("cervical spine") OR (INDEXTERMS(neck) OR ALL(neck)) OR ALL("cervical strength") OR ALL("Pilates exercises")) AND (ALL(rugby) OR (INDEXTERMS(rugby) OR ALL(rugby)) OR ALL(soccer) OR (INDEXTERMS(football) OR ALL(football) OR ALL("football s") OR ALL(footballer) OR ALL("footballer s") OR ALL(footballers) OR ALL(footballs)) OR ALL("football players") OR ALL("rugby players") OR (ALL(amateur) OR ALL(amateurs)) OR (ALL(elite) OR ALL(elites) OR ALL(elitism)) OR (ALL(professional) OR ALL("professional s") OR INDEXTERMS(professionalism) OR ALL(professionalism) OR ALL(professionality) OR ALL(professionalization) OR ALL(professionalize) OR ALL(professionalized) OR ALL(professionalizing) OR ALL(professionally) OR ALL(professionals))) AND (ALL("brain concussion") OR (INDEXTERMS("brain concussion") OR (ALL(brain) AND ALL(concussion)) OR ALL("brain concussion") OR ALL(concussion) OR ALL(concussions) OR ALL(concussed) OR ALL(concussive)) OR ALL("brain injuries traumatic") OR ALL("traumatic brain injury") OR ALL(TBI) OR ALL("chronic traumatic encephalopathy") OR ALL(CTE) OR ALL("incidence rate") OR ALL("injury rate") OR ALL("random allocation\*") OR ALL("Randomised controlled trial") OR ALL(Pre-post)) |
| **SPORT Discus - run 8/9/2022**  (TX “strength training” OR TX “resistance training” OR TX “Muscle strength” OR TX “neck strengthening” OR TX “isometric” OR TX “cervical vertebrae” OR TX “cervical spine” OR (DE “neck” OR TX “neck”) OR TX “cervical strength” OR TX “Pilates exercises”) AND (TX “rugby” OR (DE “rugby” OR TX “rugby”) OR TX “soccer” OR (DE “football” OR TX “football” OR TX “football s” OR TX “footballer” OR TX “footballer s” OR TX “footballers” OR TX “footballs”) OR TX “football players” OR TX “rugby players” OR (TX “amateur” OR TX “amateurs”) OR (TX “elite” OR TX “elites” OR TX “elitism”) OR (TX “professional” OR TX “professional s” OR DE “professionalism” OR TX “professionalism” OR TX “professionality” OR TX “professionalisation” OR TX “professionalise” OR TX “professionalised” OR TX “professionalising” OR TX “professionally” OR TX “professionals”)) AND (TX “brain concussion” OR (DE “brain concussion” OR (TX “brain” AND TX “concussion”) OR TX “brain concussion” OR TX “concussion” OR TX “concussions” OR TX “concussed” OR TX “concussive”) OR TX “brain injuries traumatic” OR TX “traumatic brain injury” OR TX “TBI” OR TX “chronic traumatic encephalopathy” OR TX “CTE” OR TX “incidence rate” OR TX “injury rate” OR TX “random allocation\*” OR TX “Randomised controlled trial” OR TX “Pre-post”) |

**Appendix Y - Search Strategies**

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| **ClinicalTrials.gov - run 24/9/2022**  “strength training” OR “resistance training” OR “Muscle strength” OR “neck strengthening” OR “isometric” OR “cervical vertebrae” OR “cervical spine” OR neck OR “cervical strength” OR “Pilates exercises” AND rugby OR soccer OR football OR “football players” OR “rugby players” OR amateur OR elite OR professional AND “brain concussion” OR concussion OR “Brain Injuries, Traumatic” OR “traumatic brain injury” OR TBI OR “chronic traumatic encephalopathy” OR CTE OR “incidence rate” OR “injury rate” OR “random allocation\*” OR “Randomised controlled trial” OR “Pre-post” |
| **Cochrane CENTRAL - run 24/9/2022**  “strength training” OR “resistance training” OR “Muscle strength” OR “neck strengthening” OR “isometric” OR “cervical vertebrae” OR “cervical spine” OR neck OR “cervical strength” OR “Pilates exercises” AND rugby OR soccer OR football OR “football players” OR “rugby players” OR amateur OR elite OR professional AND “brain concussion” OR concussion OR “Brain Injuries, Traumatic” OR “traumatic brain injury” OR TBI OR “chronic traumatic encephalopathy” OR CTE OR “incidence rate” OR “injury rate” OR “random allocation\*” OR “Randomised controlled trial” OR “Pre-post” |
| **World Health Organization – International Clinical Trials Registry Platform (ICTRP) - run 24/9/2022**  “strength training” OR “resistance training” OR “Muscle strength” OR “neck strengthening” OR “isometric” OR “cervical vertebrae” OR “cervical spine” OR neck OR “cervical strength” OR “Pilates exercises” AND rugby OR soccer OR football OR “football players” OR “rugby players” OR amateur OR elite OR professional AND “brain concussion” OR concussion OR “Brain Injuries, Traumatic” OR “traumatic brain injury” OR TBI OR “chronic traumatic encephalopathy” OR CTE OR “incidence rate” OR “injury rate” OR “random allocation\*” OR “Randomised controlled trial” OR “Pre-post” |