

# Mixed Methods Designs for Sports Medicine Research



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## KEYWORDS

- Mixed methodology • Qualitative • Quantitative • Sports medicine
- Research design

## KEY POINTS

- Mixed methods research (MMR) encompasses the use of qualitative and quantitative methodological approaches to observe, evaluate, and understand particular phenomena of interest.
- MMR is adopted by researchers for a variety of reasons although the most important aspect is that using qualitative and quantitative techniques adds to topic understanding.
- The type of design selected for MMR should only be used if it is an appropriate approach driven by the research question.
- MMR does not simply encompass collecting 2 types of data but mixing the 2 procedures in an appropriate manner.
- MMR requires more time and resources than a single method in isolation, particularly if using a concurrent design where both methods are initiated simultaneously.

Mixed methods research (MMR) is a relatively new technique within sports medicine research where quantitative and qualitative research methods are combined. The purpose of this review is to detail 5 particular aspects of MMR, including (1) what MMR is, (2) when MMR should be used, (3) types of MMR designs, (4) how MMR has been used in sports medicine, and (5) considerations for future use of MMR within sports medicine. On conclusion of reading this review, readers should have a thorough understanding of the benefits MMR provides to the field of sports medicine moving forwards.

## WHAT IS MIXED METHODS RESEARCH?

There are 2 primary types of research methods used within sports medicine currently: quantitative and qualitative. Quantitative research is primarily conducted via investigation of a particular research question and/or hypothesis, which generates numbers and uses statistical analyses to produce descriptive and inferential

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statistics.<sup>1</sup> Most surveys and experimental studies use quantitative methods allowing for deductive reasoning. A hallmark of quantitative research is the consideration and emphasis on internal and external validity as well as reliability to ensure that results are repeatable and generalizable to the populations under investigation.<sup>2</sup> In turn, qualitative research is hypothesis generating meaning that nothing is predetermined and the focus is on gaining context or explanation of why or how a phenomenon exists.<sup>3</sup> Focus groups, key informant interviews, and open-ended surveys are examples of qualitative research that allow for inductive reasoning. As quantitative focuses on validity and reliability for rigor, qualitative research has its own methods of establishing strength. Instead of reliability, qualitative data use the concepts of consistency and trustworthiness whereas validity incorporates correctness, strength, and credibility of statements being given.<sup>4-6</sup> Sport medicine researchers tend to use these methods in isolation, which may be appropriate given the research questions under study. By using these methods individually, however, researchers may not be getting a full picture of phenomena that exist.

MMR is defined as “the type of research in which a researcher or team of researchers combines elements of qualitative and quantitative research approaches for the broad purposes of breadth and depth of understanding and corroboration.”<sup>4</sup> Specifically, quantitative and qualitative approaches are combined in at least one way during a single study via techniques, methods, or concepts.<sup>4-7</sup> MMR is particularly useful for phenomena in which there are multiple stakeholders or influencing factors. This design allows for further context and meaning to be provided to statistical information, which often carries a great deal of weight with readers. In the field of sports medicine, an example of this multidisciplinary care is related to concussive injuries, such as barriers to incorporating academic accommodations after injury, under-reporting of injuries, and removing an individual from participation, which all require the collaboration of multiple stakeholders.

## WHEN TO USE MIXED METHODS RESEARCH DESIGNS

When identifying which research method is most appropriate for use, researchers consider the specific research question and the population under study. Although this is necessary for any design being selected, it is imperative for use in MMR due to the variety of design sequences that exist.<sup>8-11</sup> The decision to use an MMR design lies solely in the additional value given to findings by using both qualitative and quantitative methods together as opposed to in isolation<sup>5,12</sup> (**Box 1**). This lends itself to research problems and questions that are multifaceted in nature with multiple viewpoints or perspectives on a problem that need to be considered as parts of a whole.<sup>9,13-15</sup> Despite the large benefit this provides to researchers, it also is a source

### Box 1

#### Key characteristics of mixed methods research

- Incorporates the use of qualitative and quantitative research methods<sup>4-7,14</sup>
  - Requires mixing of the 2 procedures, not simply collecting both types of information
- Adopted for 5 primary reasons<sup>6,17,18</sup>:
  - Triangulation/corroboration of different findings within one phenomenon
  - Complementarity to enhance or clarify results from one method to another
  - Initiation to discover a new process or perspective
  - Development of one method from another method's results
  - Expansion of findings from one method to provide context to another

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