



Sports Injury Research

Evert Verhagen | Willem van Mechelen

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Edited by

Evert Verhagen

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Great Clarendon Street, Oxford OX2 6DP

Oxford University Press is a department of the University of Oxford.
It furthers the University's objective of excellence in research, scholarship,
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Published in the United States
by Oxford University Press Inc., New York

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First published 2010

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British Library Cataloguing in Publication Data
Data available

Library of Congress Cataloging in Publication Data
Data available

Typeset in Minion by Cepha Imaging Private Ltd., Bangalore, India
Printed in Great Britain
on acid-free paper by the
MPG Books Group, Bodmin and King's Lynn

ISBN 978-0-19-956162-9

10 9 8 7 6 5 4 3 2 1

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Preface

A physically active lifestyle and active participation in sports is important, both for adults and for children[1]. Reasons to participate in sports and physical activity are many; pleasure and relaxation, competition, socialization, maintenance, and improvement of fitness and health, etc. However, with the current focus on a physically active lifestyle, an increasing number of sporting and physical activity injuries can be expected. Consequently, sporting and physical activity injuries are becoming a major health problem. Given the unwanted side effects of a healthy activity, successful prevention of sports injuries has great potential health gain: in the short term, the absolute number of sporting injuries falls and, in the longer term, the risk of recurrences of injuries and prolonged periods of impairment will be prevented.

In general, measures to prevent sports injuries do not stand by themselves. They result from a series of four steps that form a sequence of prevention[2]. First, the sports-injury problem must be described in terms of incidence and severity. The second step identifies the aetiological risk factors and mechanisms underlying the occurrence of injury. Based on this information on the underlying risk factors, in the third step preventive measures that are likely to work can be developed and introduced. Finally, the (cost-)effectiveness of the introduced preventive measures should be evaluated by repeating the first step or preferably by performing intervention trials.

With the increasing interest in physical activity and sports for health, comes an increasing interest for safety in physical activity and sports. In the coming years more research efforts within this field can be expected, as well as a higher demand for evidence on injury prevention and treatment. An important problem that will arise is that most individuals involved in sports medicine are not thoroughly trained in epidemiological and methodological rigour. For this reason this book aims to share the current expertise and knowledge of the world's leading researchers within the field of sports-injury research.

This book is intended to be a comprehensive contemporary text on methodology in sports-injury research. It is our intention to provide you, the reader, with a solid and comprehensive background on epidemiological methods employed in sports-injury research, to make you aware of key methodological issues, and to let you recognize the effect of employed methodology on interpretations of study results. In addition, this book will give you—through the division in subsequent sections—a clear and solid outline of the road that leads to sports-injury prevention, i.e. how does one go from an injury problem to successful injury prevention. It should be noted that this book will not provide a comprehensive review of the available literature on sports injuries, prevention, and treatment. It is intended as a thorough epidemiological and methodological background and reference for researchers and professionals in the field of sports medicine.

We expect that the contents of this book will motivate you to conduct well-designed sports-injury studies, and that consequently we will come across your research in future publications.

Evert Verhagen
Willem van Mechelen

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Part 1

Key issues in epidemiology and methodology

Chapter 1

Defining a research question

Peta White

Research questions typically begin as general ideas or topics. These ideas may originate from a researcher's interest, an identified problem, or a recognized gap in current knowledge. In the specific area of sports injury, research ideas may be generated in relation to a particular type of injury, sport, or participant population—or a combination of all three. Alternatively, an apparent increase in the incidence of a particular type of injury may spark research attention, as might a lack of knowledge about how to prevent such injury. In any case, it is from an initial research idea that the process towards defining a manageable research question begins.

As in all fields of research, progress in sports-injury research depends on the clear definition of research questions from the outset of projects. Defining a research question requires that a researcher articulate the purpose of the research[1]. In turn, the research question provides the basis on which a researcher can make decisions with regards to methodology and design[2]. Therefore, it follows that a research project with a clearly defined research question will also have a clear purpose, and, perhaps most importantly, an appropriate methodological design. This relationship applies equally to both quantitative and qualitative studies and to clinical, biomechanical, epidemiological, and social behavioural injury research. Unfortunately, there have been a number of methodological limitations in the sports injury studies to date[3]. Encouraging that future studies be undertaken only once the research question has been clearly articulated is one important way of addressing this issue.

Research questions and the research purpose

As stated previously, a clear picture of what the research wants to address is necessary before a specific research question can be constructed. In conceptualizing the purpose of a research project, researchers should be guided by a framework or paradigm that is accepted by their particular research community[4]. This way, it is clear how the research will contribute to progress in the broader research domain.

Arguably the most documented application of a framework to the sports-injury field of research is van Mechelen's four-stage sequence of injury prevention[5]. This was directly adapted from the well-known public health model for preventive research[6]. Recently, Finch [3] has extended the original sequence of prevention [5] in a framework that emphasizes the development of evidence-based interventions and the need to consider—and become informed about—the contextual issues related to the uptake of preventive measures. The Translating Research into Injury Prevention Practice (TRIPP) framework [3] comprises six stages and is presented in Table 1.1. Research based on this framework aims to determine what interventions are likely to work and why, as well as the factors that will facilitate or impede the uptake of recommended preventive measures. This purpose can be translated into research questions around the who, what, when, where, how, and why of sports-injury preventive measures. For example, a researcher might want to know in what particular context a preventive measure will be successful and for whom.