CONTENTS

Acknowledgments

Preface

vii

1	Why Monitor Athletes2	,
•	Why Monitor Athletes? Stress Response to a Training Session Adaptation to a Training Program	;
	Risk of Overreaching, Overtraining, Sickness, and Injury Importance of Individualized Monitoring Conclusion	12
2	Research Tools for Athlete Monitoring	13
	Basic Statistical Tools for Practitioners Descriptive Statistics Reliability Validity Meaningful Change Correlation and Relationships Presentation of Results Qualitative Analysis Conclusion	14 15 20 24 27 33 34 40 41
3	Physiological Effects of Training Stress	43
	General Adaptation Syndrome Model Fitness-Fatigue Model Stimulus-Fatigue-Recovery-Adaptation Model Applications of the Models Fatigue Continuum Overreaching and Overtraining Interdisciplinary and Multifactorial Approaches to Avoid Overtraining Conclusion	44 45 50 51 53 64 68
4	Quantifying Training Stress	69
	Measurement Tools External Load Internal Load Conclusion	69 70 78 101
5	Measures of Fitness and Fatigue	103
	Neuromuscular Fatigue Heart Rate	104 113

	Hormonal and Biochemical Markers	116
	Immunological Markers	126 129
	Performance Tests Conclusion	134
6	Current Monitoring Practices	
	and Technologies	135
	Monitoring Practices in Sport	135
	Monitoring Technologies	140
	Data From Monitoring Technology	147
	Applications of Monitoring Technology Conclusion	149 155
7		
7	Integrating Monitoring With Coaching	157
	Art and Science of Monitoring	157
	Monitoring Data Within a Training Session	160
	Providing Monitoring Feedback to Athletes	164
	Barriers to Effective Athlete Monitoring Conducting In-House Monitoring Projects	168 169
	Conclusion	172
8	Athlete Monitoring Guidelines	
	for Individual Sports	173
	Individual Sport Athletes	174
	Monitoring in Individual Sports on a Budget	174
	Monitoring With Training Diaries	175
	Applying Monitoring in Individual Sports	176
	Reporting One Week of Monitoring for an Athlete	183
	Modifying Training Based on Monitoring Considerations for Monitoring Athletes in Individual Sports	185 187
	Conclusion	188
9	Athlete Monitoring Guidelines	
	for Team Sports	189
	-	
	Team Sport Athletes Monitoring in Team Sports on a Budget	189 190
	Applying Monitoring in Team Sports	191
	Monitoring System for Team Sports	196
	Reporting One Week of Monitoring for a Team Sport	196
	Modifying Training Based on Monitoring	198
	Considerations for Monitoring Athletes in Team Sports	200
	Conclusion	201

References 203 Index 249 About the Author 253