**Glycemic Control of Male Professional Athletes With Type 1 Diabetes During Exercise, Recovery and Sleep: Retrospective, Observational Study Over an Entire Competitive Season**

Eva van Weenen, MSc1; Nicolas Banholzer, PhD2; Simon Föll, MSc1; Thomas Züger, MD3,4; Federico Y. Fontana, PhD3,5; Kristina Skroce, MSc6,7; Charlotte Hayes, MMSc5; Mathias Kraus, PhD8; Stefan Feuerriegel, PhD9; Sam N. Scott, PhD5; Vera Lehmann3, Felix Wortmann, PhD10,\*; Christoph Stettler, MD3,\*

\*Joint last author

1 Department of Management, Technology and Economics, ETH Zurich, Zurich, Switzerland

2 Institute of Social and Preventive Medicine, University of Bern, Bern, Switzerland

3 Department of Diabetes, Endocrinology, Nutritional Medicine and Metabolism, Bern University Hospital, University of Bern, Bern, Switzerland

4 Department of Endocrinology and Metabolic Diseases, Kantonsspital Olten, Olten, Switzerland

5 Team Novo Nordisk Professional Cycling Team, Atlanta, USA

6 Faculty of Medicine, University of Rijeka, Rijeka, Croatia

7 Department of Neurosciences, Biomedicine and Movement Sciences, University of Verona, Verona, Italy

8 School of Business, Economics and Society, Friedrich-Alexander University Erlangen-Nürnberg, Nuremberg, Germany

9 Institute of AI in Management, LMU Munich, Munich, Germany

10 Institute of Technology Management, University of St. Gallen, St. Gallen, Switzerland

**Corresponding author:**

Prof. Christoph Stettler

Department of Diabetes, Endocrinology, Nutritional Medicine and Metabolism

Freiburgstrasse 15, CH-3010 Bern, Switzerland

christoph.stettler@insel.ch

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**ABSTRACT**

**Objective:** To analyze glycemic control of professional athletes with type 1 diabetes during a competitive season.

**Research Design and Methods:** We analyzed CGM data of 12 professional male cyclists with type 1 diabetes, assessing glycemic control during exercise, recovery, and nocturnal phases on days with competitive exercise (CE) and non-competitive exercise (NCE), respectively. Time in glycemic ranges was compared with general treatment guideline targets. Furthermore, we assessed whether glycemic control differed between CE and NCE days.

**Results:** Mean HbA1c was 6.7±0.5%, or 50±5 mmol/mol. Over the season, there were 280.8±28.1 days of cycling per athlete. Overall, time in range (70–180 mg/dL) was 70.0±13.7%, time in hypoglycemia (<70 mg/dL) was 6.4±4.7%, and time in hyperglycemia (>180 mg/dL) was 23.6±12.5%, not significantly differing from general guideline targets. During NCE days, time in range was 71.0±13.8%, time in hyperglycemia was 22.2±12.1%, while time in hypoglycemia was 6.9±5.0%. The latter was related to an increased time in hypoglycemia overnight, significantly exceeding guideline targets (10.1±7.4% vs. 4%, *p*=0.008). CE days revealed a time in range of 70.1±14.1%, time in hypoglycemia of 4.7±4.5%, but an increased time in hyperglycemia (25.2±12.5%). Along with this, time in hyperglycemia during exercise was higher on CE vs NCE days (38.5±12.9% vs. 21.9±13.9%, *p*<0.001), exceeding guideline targets (*p*=0.003).

**Conclusions:** Overall glycemic control of these professional athletes is remarkably good and generally matches guideline targets. Further improvements could be achieved by focusing on glycemic control during competitions, as well as on the avoidance of nocturnal hypoglycemia after non-competitive exercise.