



Human Factors: The Journal of the Human Factors and Ergonomics Society

Reflective Tape Applied to Bicycle Frame and Conspicuity Enhancement at Night

Marco Costa , Leonardo Bonetti , Manuela Bellelli , Claudio Lantieri , Valeria Vignali , Andrea Simone

[Show all authors](#)



[Please click here for full access options](#)

Abstract

Objective:

Four studies were conducted to assess bicyclist conspicuity enhancement at night by the application of reflective tape (ECE/ONU 104) to the bicycle rear frame and to pedal cranks.

Background:

Previous studies have tested the benefits of reflective markings applied to bicyclist clothing. Reflective jackets however need to be available and worn while reflective markings enhance conspicuity without any active behavior by the bicyclist.

Method:

In the first study, reflective tape was applied to the rear frame. Detection distance was compared in four conditions: control, rear red reflector, high visibility jacket, and reflective tape. In the second study, the same conditions were studied with night street lighting on and off. In the third study, detection and recognition distances were evaluated in rainy conditions. In the fourth study, visibility was assessed with the reflective tape applied to pedal cranks.

In the first study, the application of reflective markings resulted in a detection distance of 168.28 m. In the second study, the detection distance with reflective markings was 229.74 m with public street light on and 256.41 m with public street light off. In rainy conditions, detection distance using the reflective markings was 146.47 m. Reflective tape applied to pedal cracks resulted in a detection distance of 168.60 m.

Conclusion:

Reflective tape applied to the rear bicycle frame can considerably increase bicyclist conspicuity and safety at night.

Application:

Reflective tape is highly recommended to complement anterior and rear lights in bicycle riding at night.

SAGE Video
Streaming video collections

SAGE Knowledge
The ultimate social sciences library

SAGE Research Methods
The ultimate methods library

SAGE Stats
Data on Demand



EQ Library

American political resources

SAGE journals



SAGE Journals

About

Privacy Policy

Terms of Use

Contact Us

Help

Browse

Health Sciences

Life Sciences

Engineering &

Materials Science

Social Sciences &

Humanities

Journals A-Z

Resources

Authors

Editors

Reviewers

Librarians

Researchers

Societies

Opportunities

Advertising

Reprints

Content

Sponsorships

Permissions

Human Factors

ISSN: 0018-7208

Online ISSN: 1547-8181

Copyright © 2017 by Human Factors and Ergonomics Society