

# The national institute for occupational safety and health

[Sociology](#)



They made measurements of the seat, handlebars, and throttle control of snowmobiles to see if they could be adjusted to better fit people. They measured how much and how often workers are jolted when they ride snowmobiles on the bumpy roads. They also tested workers' hands for nerve functions by administering a vibrotactile sensitivity test because disturbance of the vibrotactile sense can indicate early signs of vibration-induced injury. However, outside of testing workers' hands for nerve functions and coordination, the other areas of complaints were not tested. Furthermore, the researchers had only the workers' word about their health prior to beginning to work for the National Park Service. Also, there was no control group. Admittedly, the researchers tried to approximate as best they could the scientific approach to determine how much of the employee complaints were due to traveling to

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the bumpy roads by attaching saver units to the snowmobiles to measure, record, and store acceleration data on all three channels after being triggered by a shock or jolt that exceeded 1 g. These units could store 1346 separate events, but were filled after four hours! Secondly, some of the workers had hand tremors and decreased hand coordination related to snowmobile use.

Another finding was that the grips on the handlebars were too narrow and not close enough to the rider to be safe and comfortable. Consequently, NIOSH stated that the most important feature to adjust was the steering bar, which if moved closer to the body with grips oriented to provide for neutral wrist positions would reduce grip forces and improve shoulder and arm

postures. They also found that the effort needed to press the throttle and hold it down was too much and, therefore recommended that the throttle control mechanism be redesigned so that the activation does not require palmer pinch forces involving the thumb.

Importantly, NIOSH recommended that snowmobiles be adjusted for each worker, which is what ergonomics is all about; namely, adjusting the machines and devices to fit employees and not the other way around. Furthermore, managers were to consult with manufacturers to develop a suspension system that will significantly reduce jolts received by NYP personnel. Also, roads were to be groomed more often to reduce the number of bumps and snowmobile riding time be reduced. Finally, employees should report injuries and pain as soon as they happen so that treatment can begin sooner.

If all of the recommendations get implemented, work-related health complaints of YNP employees should become virtually non-existent.