

as an organ, as a part of the body, had an inherent natural reaction to a new milieu by slowing down the function such as mandibular movement velocity in the masticatory system to avoid damage.

According to Newton's second law, $F = ma$, the force produced was proportional to the acceleration. Data obtained from this study implied that the occlusal force impact on the masticatory apparatus such as on the TMJ *per se* would probably be reduced after occlusal splint insertion, because both the maximal closing velocity and the average closing velocity decreased. If the microtrauma to the subject was produced by excessive loading to the stomatognathic system, an occlusal splint would probably reduce the improper force impact on the masticatory system by slowing down the closing velocity. This could explain to some extent the therapeutic effect of the occlusal splint on the symptoms of some TMD patients. Because the present study was to investigate a short-term effect, subsequent study on long-term wearing of the splint under a well-controlled experimental condition is needed to reveal the real mechanism of the splint in the management of TMD.

We concluded that inter-individual variation of mandibular movement velocity existed in healthy subjects. The maximal and the average mandibular closing-phase velocities decreased after occlusal splint insertion. Maximum opening velocities of the male subjects were faster than those of females before and after splint insertion. However, an evaluation of the long-term effect of occlusal splint on the velocity change is needed to reveal the real physiological effects of the splint.

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