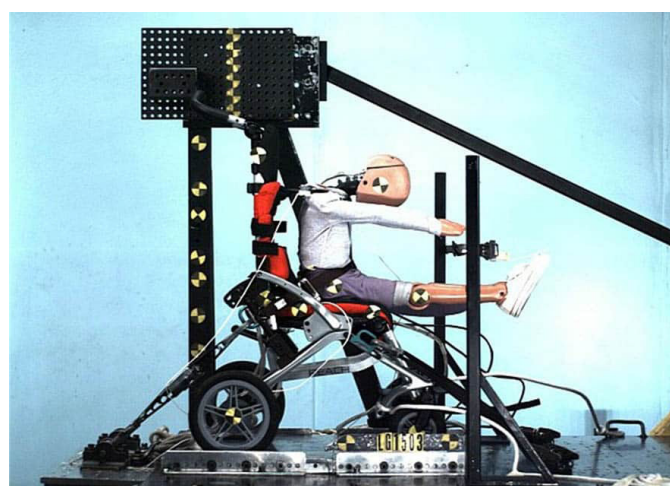




Let's Get It Clear No.2
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It's been 'crash tested'! So what?

You may see in a manufacturer's literature that their product (e.g. a head rest) has been 'Crash Tested'. It is important to understand there is no one crash test that can fully represent all conditions of wheelchair usage. You really need to ask: which tests have been conducted, what set up does the manufacturer recommend for use in transport, are these relevant to my product, and, critically, whether it passed (i.e. is the item 'Crashworthy'?).



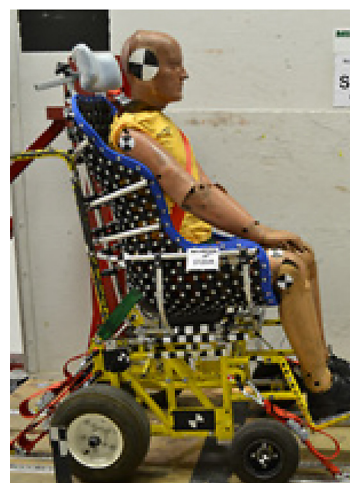
In the wheelchair world the crash tests for the chairs are covered in ISO 7176-19¹, the vehicle tie down and occupant restraint systems in ISO 10542-1², and the seating systems in ISO 16840-4³. In the latter this covers the structural integrity of the occupant support surfaces and any integrated postural support devices that form part of the seat. ISO 16840-4 also tests the means of attaching the seating system to a host wheelchair. The ISO 16840-4 test method uses a surrogate wheelchair with characteristics that are similar to those of a typical host manual device.

Following demonstration of both structural and mounting integrity, an ISO 16840-4 compliant seating system may be attached to an ISO 7176-19

compliant wheelchair to provide a combined mobility device suitable for use in transport.

Strength testing of postural support devices is covered in ISO 16840-3⁴, but these tests relate to items designed for assisting the occupant's positioning in the wheelchair in normal wheelchair use, and are not designed for testing devices designed as crash restraints.

There is no specific ISO crash test for 'aftermarket' supplied postural support devices such as pelvic positioning belts, head supports, or head rests: however, the suitability of a head support used in a wheelchair for transportation needs to be covered by a risk assessment as to whether the occupant is better protected against the forces experienced in accelerating, braking, or cornering, than without.



ISO 16840-4 crash test rig for seating systems using a surrogate wheelchair

References

1. ISO 7176-19:2022 Wheelchairs - Wheelchairs for use as seats in motor vehicles
2. ISO 10542-1:2012/ Amd1:2021 Technical systems and aids for disabled or handicapped persons — Wheelchair tiedown and occupant-restraint systems — Part 1: Requirements and test methods for all systems
3. 16840-4:2009 Wheelchair seating - Seating systems for use in motor vehicles.
4. ISO 16840-3:2022 Wheelchair seating - Determination of static, impact, and repetitive load strengths for postural support devices.

