



CASE REPORT

Injuries caused by inflatable bouncers

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Introduction

Inflatable bouncers, variously known as ‘moon-walks’, ‘air castles’ or ‘inflatable slides’ depending on the design, are customarily used at fairs, carnivals, festivals and amusement parks to provide entertainment. These inflatable bouncers are also used at private functions and parties through rental agencies. Players on these inflatable bouncers vary in age from children to adults. There have been several reports of injuries caused by playing on these bouncers.^{1–4}

We present two cases of injuries sustained while playing on these inflatable bouncers. This report also emphasizes the importance of strict adherence to the safety guidelines and recommendations laid down by the manufacturers and consumer organisations in order to prevent injuries while playing on these inflatable bouncers.

Case reports

Case 1

A 5-year-old girl was sliding down an inflatable slide simultaneously with a 20-year-old adult. At the bottom of the inflatable bouncer, both players took a tumble. The adult player accidentally rolled over

the right lower limb of the child resulting in a greenstick fracture of the right femur of the child. There was no angulation at the fracture site and the injury was treated conservatively with a plaster cast. At 6 weeks follow-up, the fracture had united satisfactorily.

Case 2

A 17-year-old boy sustained a closed comminuted fracture of the distal third of the left humerus while playing on an inflatable bouncer. He apparently sustained the fracture after falling in a jumping castle and twisting his left arm under his own weight. There were a number of other children with different age groups playing in the inflatable bouncer at the time. There was minimal angulation at the fracture site; the fracture was treated conservatively with a plaster cast. At 6 weeks follow-up, the fracture had united satisfactorily.

Discussion

There has been a tremendous number of inflatable bouncers sold or rented out in recent years. According to a business journal, inflatable bouncers are among the fastest growing business opportunities of the new millennium and they have been ranked among the top 10 most profitable business ventures around the world.⁵ Recently, several reports have

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appeared highlighting the danger and injuries associated with playing on these inflatable bouncers.¹⁻⁴

In a Danish study, which was part of the European Home and Leisure Accident Surveillance System (EHLASS project), 91 injuries were reported from five Danish casualty wards. The injuries sustained were 42% bruises, 31% fractures, 23% distortions and 3% tendon and muscle strains.³ Four of the patients with fractures had to be admitted for further observation or treatment. The US Consumer Product Safety Commission (CPSC) has also investigated nine incidents, which resulted in 21 injuries, on slide-type inflatables and 33 incidents, which resulted in 33 injuries with bounce-type inflatables between 1999 and 2001.¹ The injuries reported were fractures, head injuries, contusions, abrasions and sprains. Additionally, the Commission was also aware of three deaths related to inflatable bouncers in the years preceding the report.

In an incident in Tasmania in 1998, on an inflatable castle slipped off the anchoring pegs due to a sudden gust of wind, lifting the jumping castle.⁴ Three children were thrown from the castle and sustained minor injuries. In another similar incident reported in the 'Hazard Alert' from the South Australian Department of Administrative and Information Services in March 2001, on an apparently fine day, an inflatable castle was hurled by a strong gust of wind, releasing the restraining ropes.² Twelve children were injured in the incident with one fatality.

The two injuries reported herein and nearly all other incidents reported were primarily attributable to lack of supervision and improper utilisation, anchoring and set-up. The contributing factors in both our cases were lack of proper supervision and allowing children and adults to play at the same bouncing session. Investigations into the Tasmanian and Australian and reports revealed that in those cases, the inflatable bouncers were not adequately restrained, the tie-down ropes slipped off the anchor pegs and inflatable bouncers being used in strong wind conditions.^{2,4}

All manufacturers of inflatable bouncers issue their own safety guidelines, which come with the purchase or rental of the bouncers. Inspection procedures and guidelines for safe set-up and operation of the inflatable bouncers vary from bouncer to bouncer and from manufacturer to manufacturer. In general, the safety rules from the manufacturer include:

- (1) Adult supervision of all children at all times.
- (2) Only the inflatable bouncers' staff may set-up and take down the bouncers.
- (3) Separate bouncing sessions for different age groups.

- (4) Inflatable bouncers are designed for children, however, there are specially designed bouncers for teenagers and adults.
- (5) Allow at least 2–3 feet around the inflatable for safety and keep the front of the inflatable bouncer clear.
- (6) Do not overload the bouncer, limit the number of players according the manufacturer's recommendation and this will allow each child enough room to play safely.
- (7) Do not climb or hang on the walls of the bouncers.
- (8) In wet conditions, the bouncer will become very slippery.
- (9) Stay out of the inflatable bouncers during strong wind or thunderstorms.
- (10) Shoes must be removed before using the bouncers.
- (11) Keep sharp objects, pets, food and drinks away from the bouncers.
- (12) Occasionally check that the bouncer is still securely pegged down.

Due to the increasing number of injuries and incidents reported involving these inflatable bouncers and in order to reduce the number of injuries through a more consistent industry-wide operation of all inflatable bouncers, several government agencies and consumer organisations have issued recommendations for the safe set-up and operation of inflatable bouncers. These organisations request all owners, operators, park safety officials and firms that rent inflatable bouncers to private parties to closely follow the manufacturers instructions and guidelines for operation and set-up. In addition, the following recommendations are provided by the organisations:

- (1) Maximum recommended weight per player is 250 lbs.¹
- (2) Do not exceed the manufacturer's requirements for maximum loads for individual bouncers.¹
- (3) The on-ground anchor weight used for the various inflatable bouncer ranges from 75 to 500 pounds for each recommended anchor position.¹
- (4) Anchor ropes, tethers and tie-downs should be sufficiently strong to resist breakage or slipping off during use.^{1,2}
- (5) Use anchoring pegs that have constructed with a restraining hook or collar at the top of the peg to prevent the attaching ropes from sliding up and being released.⁴
- (6) Ground stakes should be driven at 40 in.¹ or 300 mm² into the ground.
- (7) Do not use the inflatable bouncer above wind speed that exceeds the manufacturer's recommendation. Unload and deflate the bouncer

when the wind speed exceeds 25 mph¹ or 45 km/h.^{2,4}

This report stresses the importance of following the inflatable bouncer manufacturer's manual for site layout, inflation procedures, tie-down procedures, number of players and size of players allowed. It is also recommended that all users of inflatable bouncer comply with the guidelines laid down by the consumer organisations. Constant adult supervision and strict adherence to these safety guidelines will ensure that a fun day out playing on the inflatable bouncer does not turn into a tragedy.

References

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