KEEP THE BACKBOARD
Nothing Sensible Ever Goes Out of Fashion

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The "Case" Against the Spineboard

Spineboards do not immobilize the spine.
Spine boards cause pain, render airway management more difficult, impair breathing and increase risk of aspiration. Spinal injuries are rare and complete at the scene anyway. There is no evidence of benefit from spinal immobilization.

Spineboards Do Not Immobilize the Spine "Evidence"
Six healthy volunteer immobilized patients.

Computerized tilt board

Reflective markers were placed on the forehead, chin, zygomatic arches.

Quantification of head and body movement via achieved using four high-speed shuttered cameras (60 frames/second, shutter speed 1/500 sec) video-based motion analysis system

Often cited


Figure 3

Actual conclusions
The current study highlights the significance of trunk motion as a factor influencing the efficacy of immobilization strategies. The current results suggest that improvements in fixation of the head without comparable fixation of the trunk may be ineffective in reducing spinal motion at the neck.


<table>
<thead>
<tr>
<th></th>
<th>Newport/Aspen Collar</th>
<th>Phthalo Collar *</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Restricted (degrees)</td>
<td>Percentage</td>
</tr>
<tr>
<td>Lateral flexion</td>
<td>31.1 ± 12.1</td>
<td>31.5 ± 8.7</td>
</tr>
<tr>
<td>Axial rotation</td>
<td>91.4 ± 32.1</td>
<td>91.4 ± 32.1</td>
</tr>
<tr>
<td>Axial rotation</td>
<td>35.0 ± 19.2</td>
<td>35.3 ± 16.4</td>
</tr>
<tr>
<td>Lateral flexion</td>
<td>30.8 ± 8.7</td>
<td>31.0 ± 8.7</td>
</tr>
<tr>
<td>Axial rotation</td>
<td>90.5 ± 19.2</td>
<td>90.7 ± 19.2</td>
</tr>
</tbody>
</table>

* Reproduced with permission from Jordan et al.


"Cervical immobilization is a myth. Even the halo frame permits 4% motion." (Hughes 1998)

"Why do neurosurgeons and orthopedic surgeons use them?"
Spine boards cause pain, render airway management more difficult, impair breathing and increase risk of aspiration.

Twenty one healthy volunteers (mean age 24) immobilized on long spineboard for 30 mins
Pain (occipital, lumbar, sacral) reported by all subjects
Fifty five percent rated pain as moderate to severe

Pressure Ulcer
Respiratory Impairment

Spinal Injuries are Rare and Complete at the Scene Anyway

Incidence
There is no evidence of benefit from spinal immobilization


Comparison University of New Mexico and University of Malaya, Malaysia
A retrospective, 5 year chart review of all patients with acute blunt traumatic spinal or spinal cord injuries transported directly from the injury site to the hospital and admitted to the inpatient service or ED

- The OR for disability was higher for patients in the United States (all with spinal immobilization) after adjustment for the effect of all other independent variables (2.03; 95% CI 1.03-3.99; \( p = 0.04 \)).

- The estimated probability of finding data as extreme as this if immobilization has an overall beneficial effect is only 2%. Thus, there is a 98% probability that immobilization is harmful or of no value.

- We repeated this analysis using only the subset of patients with isolated cervical level deficits. We again failed to show a protective effect of spinal immobilization (OR 1.62; 95% CI 0.64-3.62; \( p = 0.34 \)).

This statement is referenced
Previous studies have estimated that three fourths of Cervical fractures are potentially unstable based on radiographic criteria
This statement is not referenced
The actual percentage of injuries that are *likely to be made worse* by lack of immobilization during the immediate post-injury period is much smaller.


The University Hospital, University of Malaya in Kuala Lumpur, Malaysia, which is *not served by an out-of-hospital emergency medical services (EMS) system*, and the University of New Mexico Hospital in Albuquerque, NM, which is *served by an extensive EMS system.*

/Spinal cord injury patients not transported but declared dead on scene?

The Holy Cochrane Library

The effect of spinal immobilisation on mortality, neurological injury, spinal stability and adverse effects in trauma patients remains uncertain.

Because airway obstruction is a major cause of preventable death in trauma patients, and spinal immobilisation, particularly of the cervical spine, can contribute to airway compromise, the possibility that immobilisation may increase mortality and morbidity cannot be excluded.

Spinal cord damage from injury causes long-term disability and can dramatically affect quality of life. The current practice of immobilising trauma patients before hospitalisation to prevent more damage may not always be necessary, as the likelihood of further damage is small. Means of immobilisation can cause tissue pressure and discomfort, difficulty in swallowing and serious breathing problems.

The review authors could not find any randomised controlled trials of spinal immobilisation strategies in trauma patients. From studies of healthy volunteers it has been suggested that patients who are conscious, might reposition themselves to relieve the discomfort caused by immobilisation, which could theoretically worsen any existing spinal injuries.

End of the Story?

EBM’s Six Dangerous Words
“There is no evidence to suggest”
Presumes “evidence” = formal hypothesis testing in an adequately powered study

**Objectives**
To determine whether parachutes are effective in preventing death and major trauma related to gravitational challenge.

**Design**
Systematic review of randomised controlled trials.

**Data sources:** Medline, Web of Science, Embase, and the Cochrane Library databases; appropriate internet sites and citation lists. Study selection: Studies showing the effects of using a parachute during free fall.

**Main outcome measure**
Death or major trauma, defined as an injury severity score > 15.

**Results**
We were unable to identify any randomised controlled trials of parachute intervention.

**Conclusions**
As with many interventions intended to prevent ill health, the effectiveness of parachutes has not been subjected to rigorous evaluation by using randomised controlled trials.

**Clinical Significance**
Advocates of evidence based medicine have criticised the adoption of interventions evaluated by using only observational data. We think that everyone might benefit if the most radical protagonists of evidence based medicine organized and participated in a double blind, randomised, placebo controlled, crossover trial of the parachute.

From Whence the Spinal Immobilization "Dogma"

