

### Supplementary material

Table 1. Results of questionnaire regarding which video signs were considered to be most useful in the identification of a possible concussion

<b>Video sign</b>	<b>Total Responses</b>
<i>Lying motionless</i>	11
<i>Motor incoordination/ataxia/staggering gait/stumbles/stagger</i>	11
<i>No protective action - floppy</i>	11
<i>No protective action - tonic</i>	11
<i>Cervical hypotonia</i>	11
<i>Impact seizure/convulsion</i>	11
<i>Tonic posturing</i>	11
<i>Blank/vacant look</i>	10
<i>Disorientation</i>	9
<i>Confusion/behaviour change</i>	9
<i>Uncontrolled fall to ground</i>	9
<i>Dazed</i>	8
<i>Walking away from pitch disengaged with game</i>	5
<i>Facial injury/fracture</i>	4
<i>Slow to get up</i>	0
<i>Clutching at head</i>	0
<i>Controlled fall</i>	0

Of the eight highest ranked video signs, definitions categorised as reaching consistency across the professional sports were:

- No protective action - floppy*
- No protective action - tonic*
- Impact seizure/convulsion*
- Tonic posturing*
- Blank/vacant look*

*Impact seizure, tonic posturing, no protective action - floppy* and *blank/vacant look* reached consensus without any significant changes required. Respondents' comments reiterated the fact that *no protective action - stiff* is actually the same as *tonic posturing* but occurs while the athlete is falling to the ground, and therefore, should be incorporated into the definition for *tonic posturing*.

Video signs with definitions categorised as failing to reach consistency across the professional sports were:

- Lying motionless*
- Motor incoordination/ataxia/staggering gait/stumbles/stagger*
- Cervical hypotonia*

Analysis of *cervical hypotonia* determined that this was a component of *no protective action - floppy* (when the arms are held by the tackling opponent), and this was therefore incorporated into the definition of *no protective action - floppy*.

Analysis of *lying motionless* identified four elements of difference across the sports:

1. The term to describe the athlete position on the playing surface
2. The term for the playing surface (e.g. ground, ice)
3. The duration of motionless (generally felt to be >2 seconds, although some sports preferred >5 seconds as an indicator of immediate and permanent removal from play)
4. The term(s) for the response to the external environment (e.g. "Does not appear to move or react, respond or reply appropriately to the game situation (including teammates, opponents, umpires or medical staff)", "Stays on playing surface without purposeful movement; concern may be shown by other players or match officials").

Analysis of *Motor incoordination* identified three elements of difference across the sports:

1. The terminology for the athlete rising from the playing surface (e.g. "Unsteady on feet", "Lose balance, trips or falls, or stumbles", "Staggers, struggles to get up")
2. The terminology for the athlete in motion on the playing surface (e.g. "Walk/run/skate in a staggered fashion", "Unsteady", "Unable to walk/run/skate normally and steadily without support")
3. The possible distinction between first and subsequent steps.

Incorporating the results and suggested comments was performed to reach a consensus definition for each of the video signs, and this required some minor modifications to the definition of some of the video signs (e.g. *blank/vacant look*), while other definitions required significant change (e.g. *motor incoordination*) or merger (e.g. *tonic posturing* and *no protective action - stiff*).