

Gear & Safety Warning:

## Midlines - low Highlines

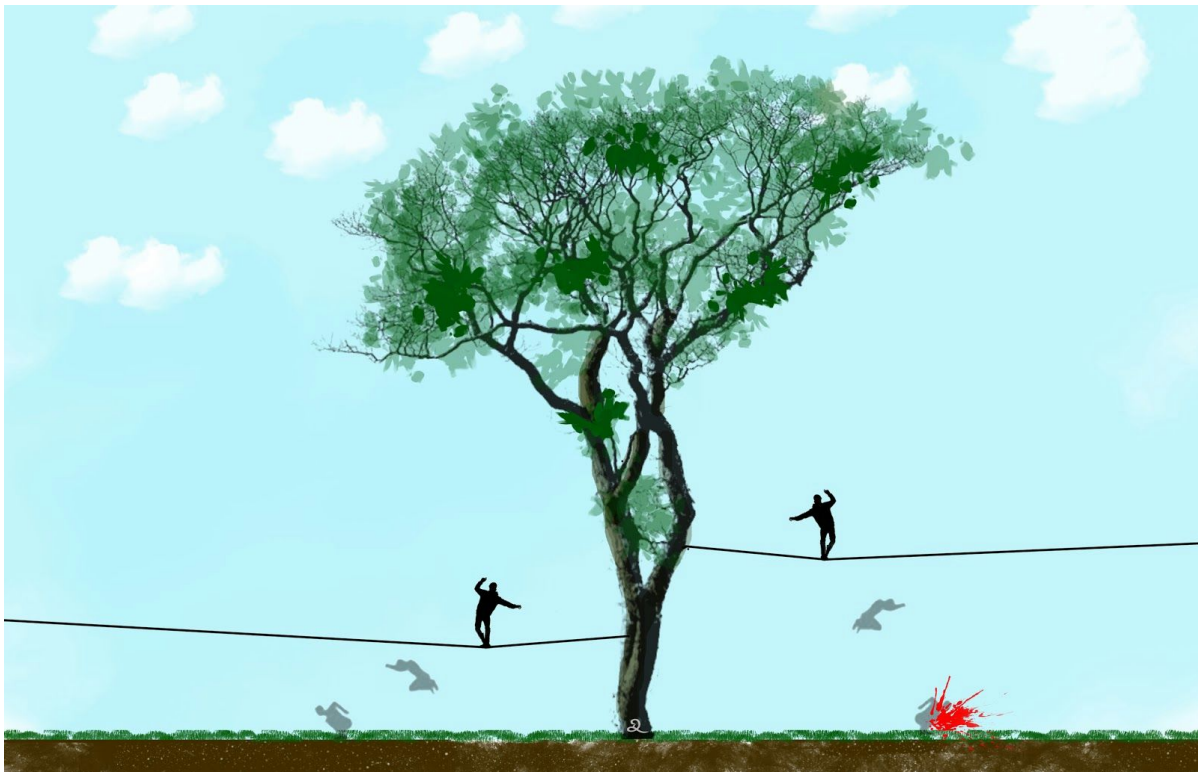
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In the early days of slacklining a midline was described as being too high above the ground to safely jump off without a high risk of injury, whilst at the same time being too low for a safe leashfall into the backup rope. This renders the conventional backup-system obsolete.

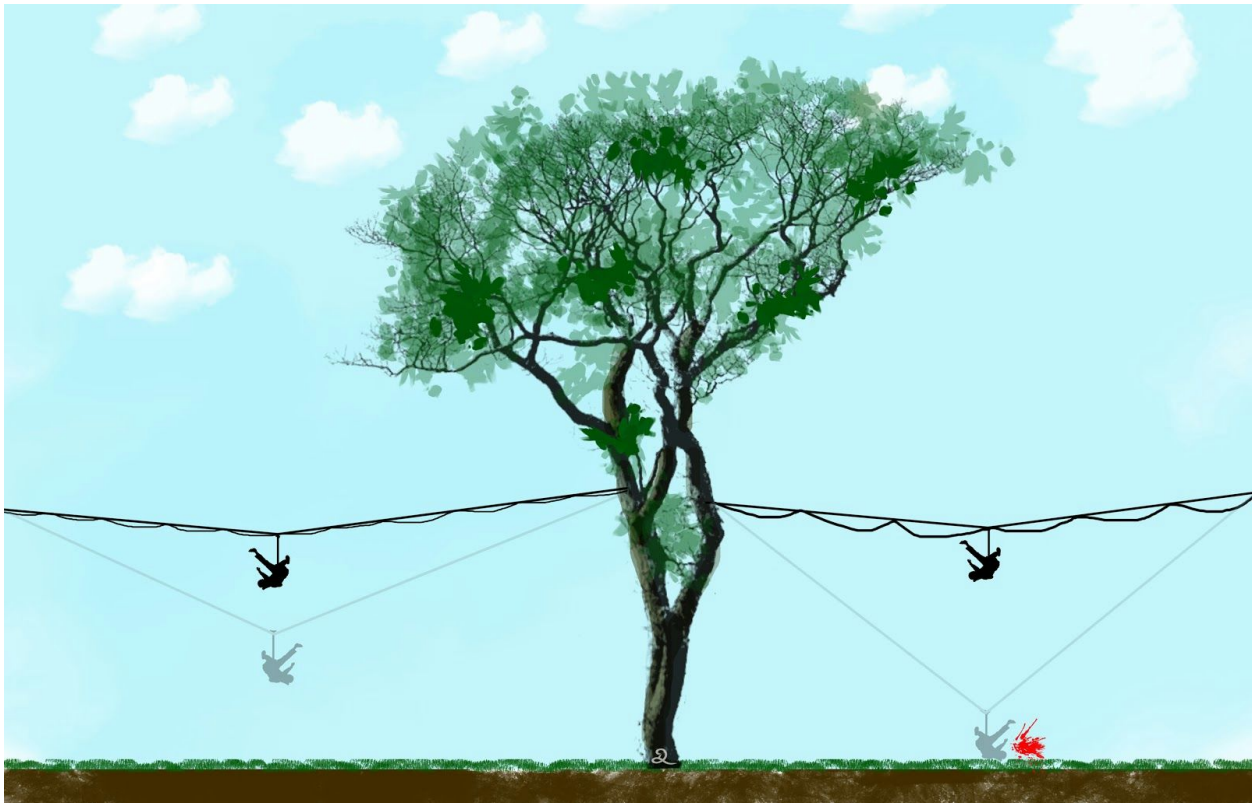
Nowadays, the latter part of the definition is often expanded and slacklines that are high enough to facilitate a safe leashfall into the backup rope are referred to as midlines for their lack of exposure.



## Safety

The injury potential of low highlines or midlines is frequently underestimated. Due to the higher risk of involuntary impact on the ground, additional safety measures have to be taken into account. The relatively low height of midlines demands a more comprehensive understanding of the equipment and the forces at play.

In most cases, a midline requires more awareness concerning these factors than a highline. Hence, a more functional definition of the term midline is necessary, which is to be derived from the aforementioned considerations.



Test the sag on the backup beforehand by loading body weight as shown below!

## Analysis

An attempt at defining the term midline could therefore be based on ground clearance whilst utilizing the conventional backup-system, consisting of a webbing or rope backup.

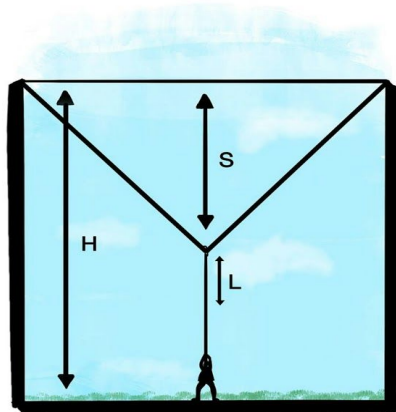
$$H > 2 (L+S) \text{ (Athanasiadis 2013)}^1$$

H = height above the ground

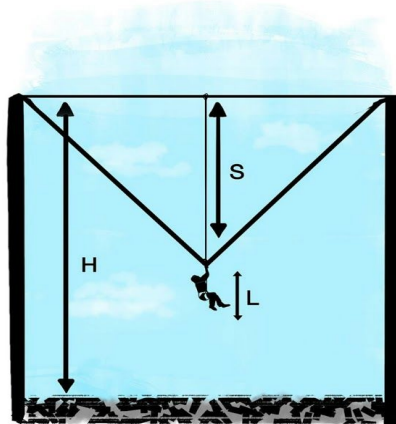
L = length of the leash

S = sag in the backup (rope or secondary webbing) whilst loaded

1



2



Measuring the sag from the ground (picture 1) or by rappelling until bodyweight is placed on the backup while attached to the mainline (picture 2).

<sup>1</sup> Athanasiadis (2013) Middle Line Backup Equation

The sag can be adjusted by tensioning the backup, which effectively amounts to a shared-load-system. The reduced cut-resistance of this system has to be addressed as it has already led to an accident with a double webbing setup<sup>2</sup>. Tensioned webbing and rope is more likely to be cut from abrasion, and a shared-load-system is prone to a catastrophic failure in which both the main and backup are cut at the same time.

A more static backup can be used as an alternative to satisfy the equation without increasing the tension in the backup. Unfortunately, this leads to higher shock loads on the slackliner and the leash.<sup>3</sup>

## Discussion

Since the sport is developing towards lower tensioned highlines and backups, it is imperative to perform a backup-sag-test. By utilizing a rope from the ground or abseiling from the mainline, the backup is loaded statically with a weight representative of all slackliners present at that time. This determines if ground clearance is sufficient to safely enable a leashfall in case of a mainline failure.

Consequently the term midline needs to be discussed in more detail for future reports and statements regarding safety regulations, evaluating accidents, classifying records and deserves more attention and awareness from slackliners.

We suggest that the term midline is to be used for low highlines and included in the highline category. Increased risk of midlines must be mitigated by additional knowledge and has to become a part of basic education for highlining.

***Remember, when rigging a highline, always consider and account for a mainline failure possibility. Have a plan for how to rescue an injured or unconscious highliner and to have any necessary rescue equipment on hand.***

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<sup>2</sup> <https://www.facebook.com/groups/slackchat/permalink/513723702034845/>

<sup>3</sup> Buckingham T., Scotland I., Höglinger H., Jörren D. (2015) Kräftemessungen in einer Highline