Less injury leads to better efficiency and welfare in newly hatched chicks

Splayed legs in chicks is a condition that occurs in newly hatched chicks. It is caused by a weakness or injury in the tendons of the feet and legs. When evident at hatch, the causes may be due to a poor chick position inside the egg or an improper incubator temperature.

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The most common cause for day-old chicks is when a brooder floor is too slippery and the young baby chick's legs slip, causing tendon injury in the legs. The surface of Intra Chickpaper is specially developed with more texture, to give the chick an optimal grip with its feet.

Splayed legs can involve one leg, although typically it affects both, causing them to extend outward to the sides of the chick's body. The severity ranges from mild to severe, and often may take a couple of weeks until it becomes obvious.

There are a number of different reasons why chicks can develop splayed legs, such as fluctuations during incubation (high humidity or any temperature fluctuations), hatching-related (too high or low temperature of the incubator during hatching) or an inadequate diet for breeders.

However, the main cause of a development in chicks after hatching is a slippery floor surface, particularly in their first few days. It may be that a chick with slightly crooked toes cannot stay balanced properly resulting in the development of splayed legs, but more commonly it will be caused by a smooth slippery surface. When the condition is so severe that the chicks are unable to walk, it puts them at high risk of starvation.

Table 1. The values for the static friction coefficient for six different surfaces respectively.

Surface	Static friction coefficient (μ)
Plastic	0.22
Cardboard	0.27
Newspaper	0.33
Intra Chickpaper Power	0.50
Intra Chickpaper Regular	0.56
Intra Chickpaper Strong	0.61

Day-old chicks have a stable footing on Intra Chickpaper and, right, a microscope photo of Intra Chickpaper clearly showing the rougher surface.

In general leg abnormalities probably cause more economic losses than any other single abnormality in the chicken house.

It has been estimated that 2-6% of all broilers display some observable signs of skeletal problems, while many more will be affected in a less visible way.

During the first period chicks require a floor surface that provides them with adequate traction to move around, otherwise it causes their legs to slide out from underneath them and prevents them from developing their leg muscles and tendons properly.

Anti-slip ensures stability and safety from the start

The number one priority, when choosing bedding, is providing enough support for proper leg and feet development in your chicks.

Chicks grow fast, and if they have a firm ground to walk on without slipping, it supports them and prevents permanent leg and feet issues.

In our own everyday life several measures have to be taken to prevent slipping accidents. For example, toddlers that are just making their own first steps on laminate or a tiled floor can be helped tremendously with anti-slip socks. An anti-slip mat in the shower is also a clear example of a household aid that increases the friction between two surfaces.

The degree of friction between two contact surfaces can be expressed as the friction coefficient. For an object standing on a surface when the object is not sliding, is called the static friction coefficient (μ).

When a chick walks around, its body is moving forward and a force is applied on the feet. The ground underneath the feet counteracts this force by providing friction and thereby prevents the chick from slipping.

The 'pull force' is the force needed to make an object start moving when standing still and can be measured by a pulling force-meter.

Continued on page 12

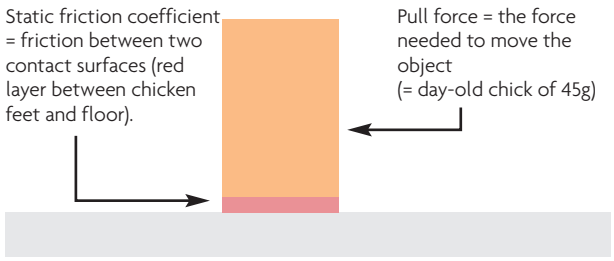

Fig. 1. Visualisation of the static friction coefficient and pull force.

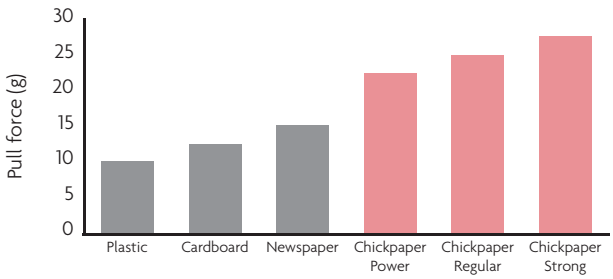

Fig. 2. The values for the static pull force for six different surfaces.

Continued from page 11

Thus, a high static friction coefficient between chicken feet and the floor means the ground is better able to oppose the forces of a moving chick, and will therefore result in a lower risk of slipping.

As examples, the friction coefficient of a ski on snow is 0.14 and for silk on silk 0.23, while for a horseshoe on concrete it is much higher at 0.67 and a car tyre on dry asphalt is even 0.72.

In Table 1 the static friction coefficient is shown and in Fig. 1 the pull force of six different surfaces are compared. These surfaces are: plastic, cardboard, newspaper and the three types of Intra Chickpaper: Power, Regular and Strong.

The chick's weight, as the test object, was standardised at 45g.

The table and the figure clearly show that the specially developed roughing of Intra Chickpaper provides the chick's legs with an optimal grip.

The static friction coefficients for the Intra Chickpapers are relatively high (on average at 0.56), while plastic, cardboard and newspaper are lower in a range around 0.27.

Fig. 1 with pull forces shows that Intra Chickpaper requires a relatively high force of around 25g to shift the chick from its place. The other three floor types plastic, cardboard and newspaper already start moving around a force of 12.5g.

Surfaces such as cardboard, plastic or newspaper should not be used in the brooder, as on these surfaces the chicks do not get sufficient grip.

Furthermore, this sort of material does not absorb the first droppings of urine and manure very well, and also tend to get packed and mouldy.

Based on a new innovative technology the surface of Intra Chickpaper has been developed with an optimal texture. It has been roughened to meet the important criteria to give the chicks' feet and legs optimal stability, grip and safety.

It can be concluded that upon using Intracare's Chickpapers there is at least a two times lower risk of slipping compared to newspaper, cardboard or plastic. ■