

Comparison of Hippological Differences Between Jeju Ponies and Jeju Pony Crossbreds: II. The Incidence of Innate Pacers in the Jeju Raceresource

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Abstract : The object of this study was to evaluate the possibility and incidence of innate pacer in Jeju raceresource. This peculiar gait occurs naturally in some foreign breeds. To author's knowledge, this is the first report of innate pacers on the Korean native horse. In order to determine the incidence of pacer in Jeju Ponies and Jeju Pony crossbreds, gait analysis and pedigree check were performed at the Let's Run Park Jeju (total 547 ponies and pony crossbred racers) in 2013. Results of this study showed that 16 (8.1%) of the 198 examined Jeju Ponies. However, 349 Jeju Pony crossbreds had no innate pacers. Of the 16 Jeju Pony pacers, 11 males (68.8%) and 5 females (31.2%) are included in the present study. In conclusion, only the Jeju Pony was innate pacers like other foreign breeds. The authors suspect that the causes of the difference of the breeds were origin of the pony and genetic differences.

Key words : gait, innate pacer, Jeju Pony, Korea.

Introduction

Gaits are generally considered to be discrete patterns of foot-falls and are divided into symmetrical and asymmetrical. In symmetrical gaits, each limb (for bipeds), or each forelimb or hind limb (for quadrupeds), is considered to be used equivalently with the same kinetics and kinematics (stance duration, swing duration, sweep angle) and left and right foot-contacts occur at equal time intervals. Common examples of symmetrical gaits in quadrupeds are walk, trot and pace (9).

The pace is a two-beat lateral gait in which the two right limbs rise and land alternatively with the two left limbs. Although the pace is a viable gait for a Standardbred racehorses, a pacy walk is considered an impure gait for more riding horses because the even four-beat pattern of the walk is broken (3,10). The horse has four natural gaits as well as a number of specialized ones, which are based largely on the old ambling, or pacing, gait. This peculiar gait occurs naturally in some breeds, notably the Tennessee Walker, the Saddlebred, the Fox Trotter, and the Standardbred, as well as in the Icelandic Horse (7). There is nearly complete assortative mating for gait; however, about 20% of the offspring sired by trotters are registered as pacers, while fewer than 1% of those sired by pacers are registered as trotters (4).

In both the pace and the trot, two feet are always off the ground. The trot is much more common, but some horses, particularly in breeds bred for harness racing, naturally prefer to pace. Pacers are also faster than trotters on the average,

though horses are raced at both gaits. Among Standardbred horses, pacers breed truer than trotters - that is, trotting sires have a higher proportion of pacers among their get than pacing sires do of trotters (8).

Jeju Pony is the Korean native pony breed. One of the attractive key features of these horses is their value of natural monument. Over the last two decades, Jeju Pony has become very popular as racehorse in Jeju. However, this Korean native pony has only rarely been studied. There are no reports about the incidence of innate pacer in the ponies. This study was to evaluate the incidence of innate pacer in Jeju Ponies and Jeju Pony crossbreds.

In order to determine the incidence of innate pacer in Jeju Ponies and Jeju Pony crossbreds, gait analysis and pedigree check were performed at the Let's Run Park Jeju (total 547 pony and pony crossbred racers) in 2013. Results of this study showed that 16 (8.1%) of the 198 examined Jeju Ponies (Fig 1). However, 349 Jeju Pony crossbreds had no innate pacers (Table 1 and Fig 2). Of the 16 Jeju Pony pacers, 11 males (68.8%) and 5 females (31.2%) are included in the present study. Fourteen pacers had the same great grand-sire. In conclusion, the Jeju Pony was innate pacers like other foreign breeds and the authors suspect that innate pace of the Jeju Pony was heritage.

Pace is smooth and fast, ranging from 19 to more than 48 km/h; result in more rotation of the spine from side-to-side and less lateral bending than the trot. Pacer is also known as a wiggler, sidewheeler, or sand shifter; any horse bred and naturally gaited to pace (1,2). Occasionally normal horses pace rather than trot, i.e. the left hind and the left fore move together, followed by the right hind and right fore, in a two-time rhythm (6). The horse is said to be tracking up at either

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Fig 1. The innate pacer is walking as gait analysis before a competition. Two right limbs rise and land alternatively with the two left limbs.

Table 1. The incidence of innate pacers in Korean native ponies

Breed	Total	Pacer	Incidence
Jeju Ponies	198	16	8.1%
Jeju Pony crossbreds	349	0	0.0%



Fig 2. Non-innate pacer of Jeju Pony racer. The feet do not touch the ground and then the simultaneous strike of left fore and right hind.

walk or trot if the hind foot is placed in or beyond the imprint of the forefoot on the same side (6). The pace is a symmetrical gait in which the lateral pair of limbs move more or less synchronously. Slow motion studies have shown that ground contact of the hind hoof precedes that of the front hoof (5). Pacing speed increases primarily as a result of an increase in stride length with minimal change in stride frequency (11).

In the US it is the pacing horse rather than the trotter that predominates. The pacer moves the legs in lateral pairs, while the conventional trotter moves its legs diagonally. The

former is preferred by the betting fraternity because it is less likely to break into a gallop, a failing which obliges it to be checked and moved to the outside of the field, thus losing any chance of winning. To assist the pacing gait and to prevent breaking (move into canter) the pacing horse is fitted with hobbles, a harness designed to connect the fore and hind legs above the knee and hock, respectively. In Europe, Scandinavia, and Russia, harness racing is more popular than flat racing, and the trotting horse is more numerous than the pacer. The sport in Australia and New Zealand is almost a national pastime. It was New Zealand that produced one of the greatest harness racers of all time (7). In Korea, the racing industry is sinking, but it need new items such as harness race by pacers to have strong the equine industry. The pace is comfortable for pony and rider and has a dainty, showy appearance.

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