"Fencing, Footwear, & the Demi-Pointe Lunge"
Part 3 of The Demi-Pointe Lunge Examined

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Abstract—Fans of the demi-pointe lunge, where one lands on the toes versus flat-footed or via the heel, have argued that the heeled shoe and boot of the Early Modern Period demanded a different way of landing. One explanation for this belief may derive from parallel works in the history of dance, but regardless of origin there is little reason that the heeled shoe should force one to land differently in the lunge. As I attempted to demonstrate in Part 1 of this study, none of our masters advocated the demi-pointe lung in word or image. In Part 2 I strove to demonstrate that while there were indeed intimate connections between fencing and other, refined arts, such as dancing, that the requirements for movement were different in each. What fencing, dancing, oratory, deportment, even equitation shared, was a common concern for and emphasis on grace in one's movement. The heeled shoe does not change our normal method of walking, what we call sagittal plane gait, and taken together our sources and modern studies of the kinesthetics of fencing reveal that period footwear did not necessitate landing on the toes.

Keywords—History of footwear, fencing, history of dance, kinesthetic of fencing, sagittal plane gait, kinesthetics of fencing

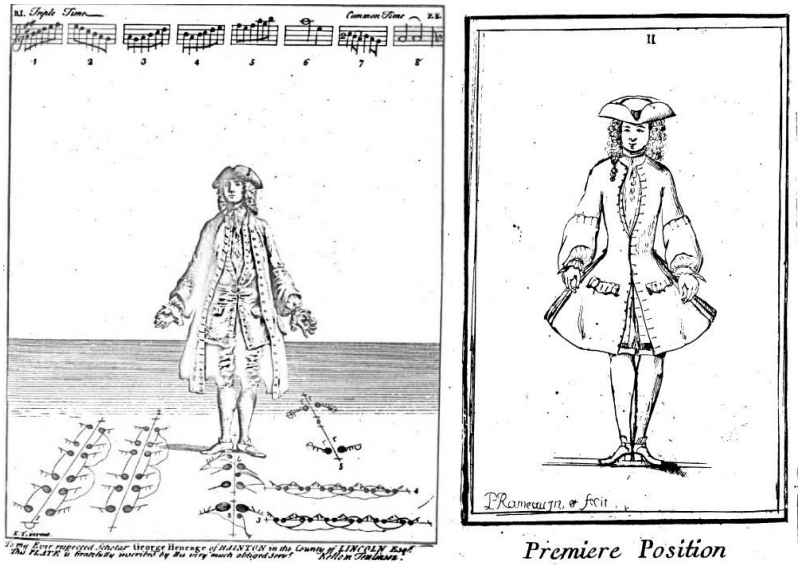
INTRODUCTION: Poise & Promenade

An additional argument for the demi-pointe lunge is based on shoes of the 17th and 18th century. As we see in artwork of the time many men wore heeled shoes and boots, and with such a shoe—the argument goes—a fencer was required to land on the balls of the foot when lunging. Though there may be several origins for this notion, one possibility is the work of Belinda Quirey (d. 1996). Mme. Ursula Hageli, in "Ballet Evolved—At the Court of Louis XIV," relates that Quirey surmised that the *turn-out* in ballet, where the dancer stands or walks with the feet pointed away from center from the hips, reportedly began with the musketeers. Large military boots, Quirey believed, made walking normally difficult and so they began to walk with their feet at about a forty-five degree angle.[1]

[1] Mme. Ursula Hageli, "Ballet Evolved—At the Court of Louis XIV," *Royal Opera House*, Youtube.com, accessed 8 August 2020.

David Teniers the Younger, "Guardroom with the Deliverance of St. Peter," ca. 1645-1647; Wikimedia commons

Dance historians have had a lot to say about the origins of ballet, especially before the reign of Louis XIV, and I leave that discussion to them. However, there is nothing in the "swashbuckling" military boot of the 17th century or the heeled court shoe that requires one to walk in a different way. The turn-out as a novel *a la mode* method of walking had more to do with fashion than footwear. As Hageli points out, Louis XIV was fond of his long legs and liked them to be seen; walking with the feet turned out was a way of displaying his legs to best effect. As the king leads, so the subjects follow. Dance training among aristocrats, never mind lessons in deportment, no doubt contributed to walking in as graceful a mode as possible. So too did fencing. Proper affectation in movement takes practice, and aristocratic children began learning early.[2]



[2] For a much earlier example, see Peter Brown, *Power and Persuasion in Late Antiquity: Towards a Christian Empire*, Madison, WI: University of Wisconsin, 1992, see 39, 48-50.

"First Position." Kellom Tomlinson, *The Art of Dancing Explained by Reading and Figures*, 1735, Google Books. This item is in the public domain.	"Rameau, First Position." Le Sieur Rameau, *Le Maître a Danser*, 1755, Google Books. This item is in the public domain.

Similar positioning can be found in military works. Demi-pointe lunge advocates also point to military drill for support, an outstanding example of which comes from Windam's *Norfolk Discipline* (1760), wherein he cites the "Prussian Step:"

> The old method of marching was to lift up the legs and feet high, and make short steps, setting the feet hard down to the ground. Of late our troops, as well as those of other nations, have begun to practice the Prussian step, and manner of marching…The manner of performing this step is by carrying the foot directly forward with a straight knee, near and almost parallel to the ground; the balance of the body is to be kept back on the leg that is behind, making as it were a momentary pause, when the knee is at its full extension (3); during which time the foot is advanced in the air, the toe turned out, and rather pointed downwards: when you shift the balance on to the other leg, you must spring forward from the ball of the foot which stood on, still advancing the foot that is foremost, and set it down flat and at once on the ground.[3]

Windham is at pains to explain the military necessity of this method of marching, most especially as regards assisting the movement of large numbers of ranked men in an orderly fashion, but more than once comments about the elegance of the method. In note 3, for example, he provides some additional details about how to step, and mentions the regiments he has seen marching (n. 2), and says

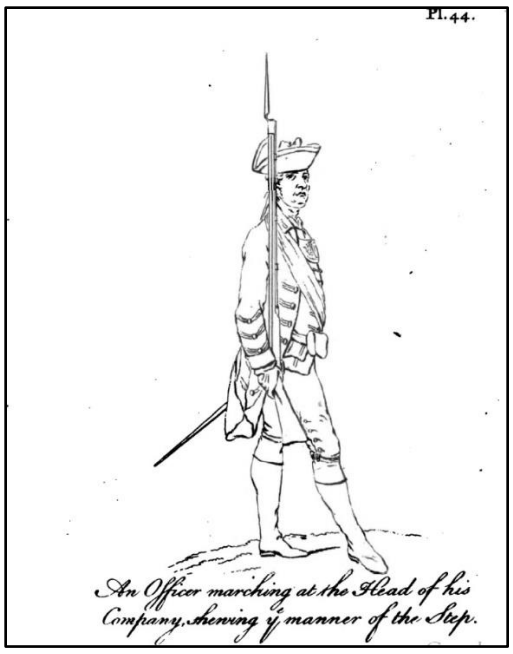
> In the way in which the two regiments before mentioned performed it, it appears no other than an easy genteel manner of walking in cadence; but we must observe that they remit a little of the exactness of the Prussians, (who perform it just as we have described;) and do not keep the knee so straight, nor the balance of the body so far back, nor mark the time so strongly as they do: which certainly takes off that appearance of stiffness and dancing, which some have objected to the Prussian step: though we must think without reason, and that when well executed it has the most graceful and military appearance imaginable:…[4]

To step in this fashion takes time and practice, a point Windham makes especially for "those who are used to follow the plough."[5] Plate 44 illustrates the general aspect of the step:

[3] W. Windham, *A Plan of Discipline copied for the Use of the Militia of the County of Norfolk*, London, UK: J. Shuckburgh, 1760, 56-57.

[4] Windham, *Norfolk Discipline*, 57.

[5] Windham, *Norfolk Discipline*, 58.



The appeal of this step owes much to Windham's belief that it is "a motion extremely beautiful and graceful, when well performed," but there was practical value as well. Warfare of the period relied greatly on coordinated maneuvers of masses of men. To turn, wheel about, change pace, retreat, and not break ranks and expose themselves to danger, soldiers had to be able to march efficiently and effectively (regardless of step). Moreover, there may have been psychological benefits as well. Marching in good order, to fife, pipe, and drum, synchronizing so many footfalls, likely bolstered a company's confidence. Even today, drilling in unison, marching in harmony, reinforces unit cohesion and resolve; it demonstrates discipline and fosters mutual reliance.

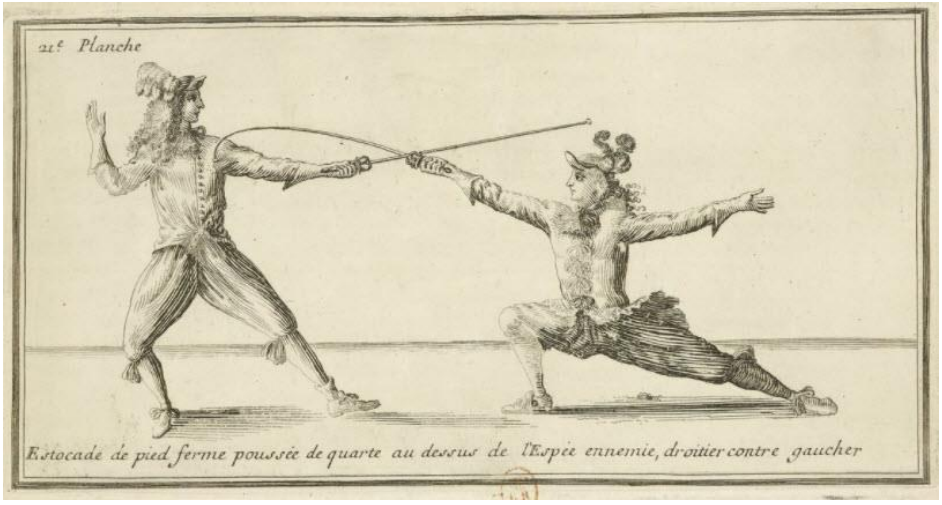
Much as the fanciness of the Prussian step might appeal, it had detractors. One of the most enjoyable is a cartoon by Thomas Rowlandson (d. 1827), a celebrated caricaturist whose many depictions of Georgian life, fair or not, do much to humanize a period so often viewed in popular imagination as staid, reserved, and proper. In this scene, "An Early Lesson of Marching," Rowlandson satirizes the Prussian step, and, echoes some of the same class divisions we see in Windham.[6]

[6] See, for example, https://www.metmuseum.org/art/collection/search/392950

It is clear that walking well and appearing to best effect were of the moment, but marching, like dance, serves a specific purpose. Men might march prettily as they got into position, but once the volleys were over, and the bayonets and hangers were out, little thought was given to how nicely they stepped. Ordered rows of bayonets, if they begin with fancy steps, will not retain them long once an enemy is engaged.

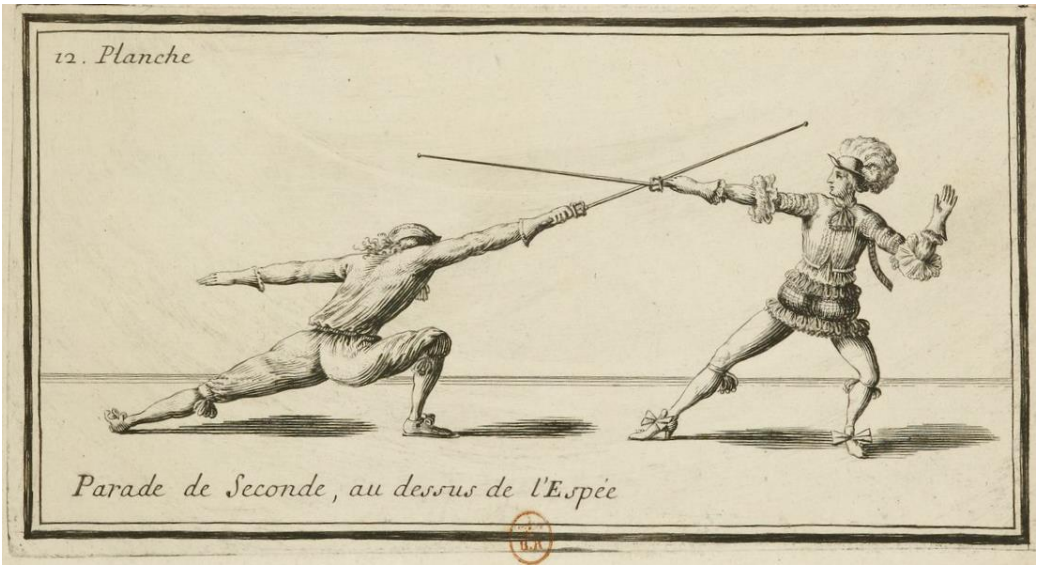
FENCING SHOES

It is important to note that fencers in the past wore a variety of shoes when training, not just the heeled court shoe or military boot. Jane Malcolm-Davies, in an excellent examination into the development of fencing kit, discussed the examples in two of the 17th century texts covered in Part 1. De la Touche, as she points out, depicts some fencers in flat shoes (see for example Figure 4 in Part 1), others in heels—one can make out a slim heel on the forefoot of the left-side fencer in Plate 21:



"Plate 21, Estocade de pied ferme." Philibert, Sieur de la Touche. *Les Vrays principes de l'espée suele dédiés*. Bibliothèque nationale de France. This item is in the public domain.

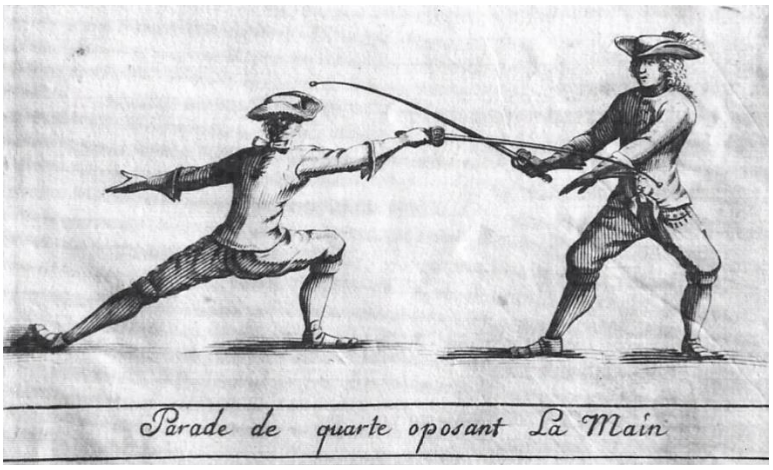
My friend Ian Brackley reminded me that plate 12 in de la Touche includes two different types of footwear in one spot, in this case both the flat sandal and a fencer in heels:[7]



L'Abbat, likewise, has fencers outfitted in a practice shoe, in this case a sandal. Both sets of shoes have slight protrusions of leather at the toe, ostensibly to help magnify the sound and effect of the *appel*.[8] If no other argument is convincing, the fact that these shoes may have been designed to make the appel more effective should. This maneuver, where one slaps the front of the foot down to startle the opponent, does not work if one is on one's toes. It suggests at the least the foot is flat if the heel is not the anchor, especially as to lunge immediately after the appel from the toe, and landing on the toe, would increase the chances of injury and falling.

[7] My thanks to Ian for reminding me of this excellent example.

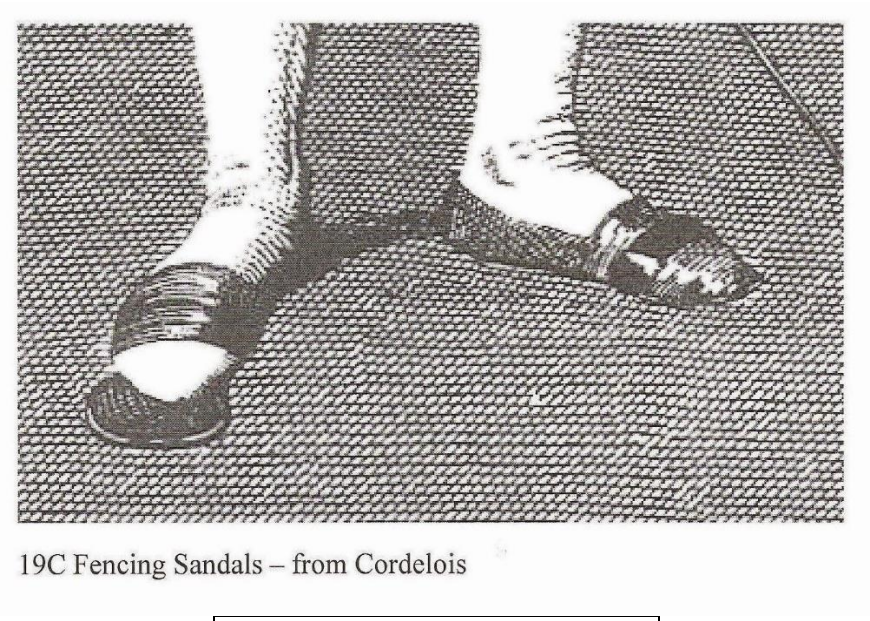
[8] Jane Malcolm-Davies, "'And at the Plastron Push': The Historical Development of Fencing Kit," *Costume* 36.1 (2002), 100-111 (106). My thanks to Professor Malcolm-Davies for sharing her article with me.



L'Abbat, 1690 (1734 in Eng.)—note the footwear

For comparison, Alexandre-Auguste Robineau, "The Fencing Match between the Chevalier de Saint-George and the Chevalier d'Eon," ca. 1787-1789. Royal Collection Trust

Close up of footwear. Alexandre-Auguste Robineau, "The Fencing Match between the Chevalier de Saint-George and the Chevalier d'Eon," ca. 1787-1789. Royal Collection Trust



19C Fencing Sandals – from Cordelois

A later example, from Cordelois, 1872

Malcolm-Davies also covers the popularity of the pump, thin-soled shoes with little to no heel. As she points out

> Sir William Hope (1707) advised students to wear a pair of fencing shoes but 'nevertheless after at least six months tuition, the scholar might wear his ordinary clothes and walking shoes.' Hope gives no description of his fencing shoes but, since they are clearly different from outdoor shoes, it may be supposed that they are pumps of some kind (106).

They may well have been pumps. Mahon uses "pump" in his translation of L'Abbat (Ch. 3 & n. 9), but the French text only supplies *la sandale*. As the images in Mahon's edition of L'Abbat seem to have fencers in sandals, it is possible that Mahon, knowing his audience in Great Britain wore low-heeled shoes (i.e. pumps), supplied "pump" for clarity.[9] The use of these low-heeled shoes became increasingly standard. Malcolm-Davies cites the examples of Randle Holme in *Academy of Armourie* (1688) who described them has heelless shoes with single soles, and, of an early 20th century shoe worn by a French master still sporting a vestigial flap.[10] What is clear is that Hope's students, like many,

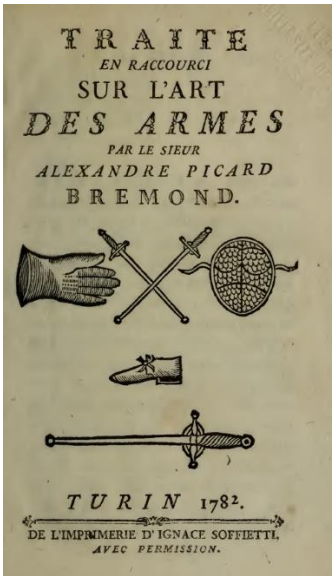
[9] Today, *pompe* is French slang for a shoe. So far as I've been able to determine, 'pumps' in English appears in the Early Modern Period, though the etymology is uncertain. Some claim that it derives from the low-heeled shoes worn at the Pump Room in Bath, England, and others cite a similarity to pistons in mechanical pumps in that they, like the strapless pump, are a tight fit.

[10] Malcolm-Davies, 106; she reports that pairs of shoes may be found in the collection of Malcolm Fare and of the Reserve Collection, Royal Armouries Museum.

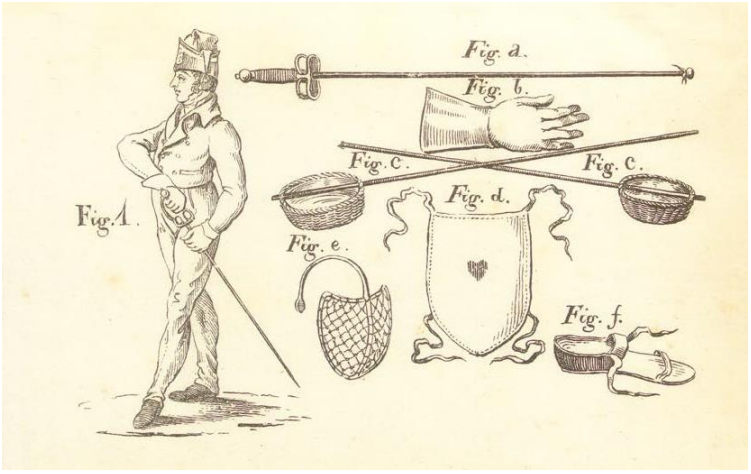
practiced in both "fencing" and street shoes. Regardless his method of movement could accommodate different styles of shoe and he clearly assumed that the type of footwear did not matter.

Ian Brackley pointed out to me that a slight protrusion on fencing sandals may reflect a different purpose than emphasizing the appel. The longer shoe may indicate a "one size fits all" approach to shoes shared in common within a salle. He added that La Boëssière commented that the open toe was to allow the foot to move more freely, and that such footwear is better for extended periods of fencing, being more comfortable. Moreover, the shoemaker should have more porous leather on the sole to improve grip and prevent one from slipping. Interesting, La Boëssière suggests making the rear foot's heel a bit higher to facilitate the bend of the ankle.[11]

The shoe, by the 19th century, was one of the iconic images often associated with fencing masters. A number of works sport illustrations of masks, foils, plastrons, and, sandals or shoes. What type of shoe varied, so it seems, by master. For example, René Julien, le Chevalier Chatelain, in his *Le Guide des Officiers de Cavalerie*, mentions only one sandal, for the lead foot.[12] Others preferred a pair. Alexandre Picard Bremond, on the cover of his treatise, sports a closed shoe with heel.[13] As a final example, Wayne in his *Sword Exercise*, recommended a slipper for the left foot, a sandal for the right.[14] Type of footwear, it seems, while it might help one on certain types of terrain, was no barrier to technique.



Bremond



le Chevalier Chatelain

[11] La Boëssière, *Traité de l'art des armes*, Paris, FR: De L'Imprimerie de Didot, 1818; 11. *Les sandales exigent aussi de soin. Celle du pied droit doit être ouverte pour que le bout du pied soit à l'aise. On la garnit de chapeau, cela est plus doux, faigute moins les tiereurs, et leur donne la facilité d'employer tous leurs moyen de vigueur; on n'auroit pas cet avantage avec des souliers, les pieds en éprouveroient de la gêne, et la fatigue ôteroit de la force, sur-tout si l'on tiroit long-temps; on recommandera au sandalier de mettre le poreux du cuir de dehors, afin d'empêcher de glisser; il aura aussi l'attention de faire la sandale gauche plus haute du talon; basse, elle gêneroit le ployé du jarret, il y auroit moins de réaction, et cela feroit perdre beaucoup de vitesse*.

[12] René Julien, le Chevalier Chatelain, in his *Le Guide des Officiers de Cavalerie*, Paris, FR: Chez Magimel, Ansel, 84. My thanks to Ian for suggesting I include these images.

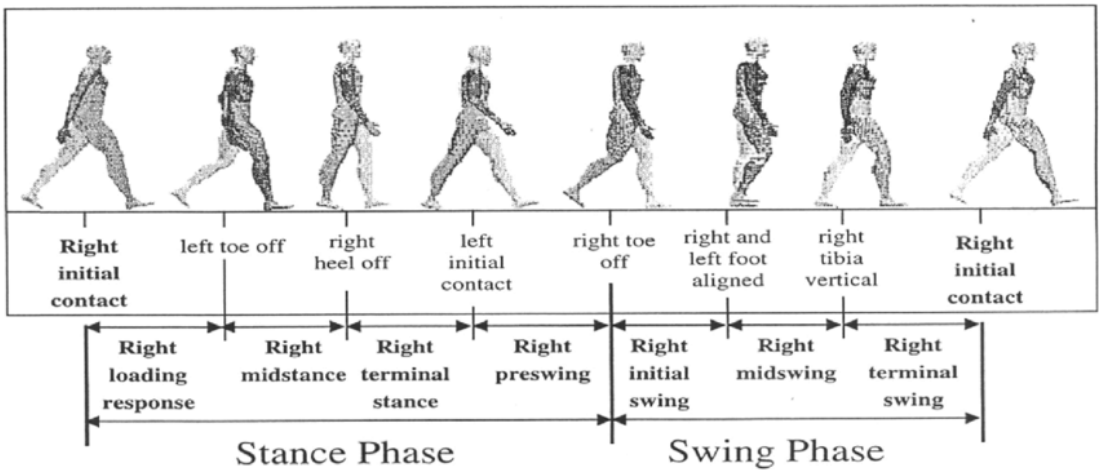
[13] Alexandre Picard Bremond, *Traite en raccourci sur l'art des armes*, Turin, IT: L'Imprimerie D'Ignace Soffietti, 1782.

[14] Brevet Major Henry C. Wayne, *The Sword Exercise*, Washington, US: Gideon and Co., 1850, 7.

THE SCIENCE OF WALKING: SAGITTAL PLANE GAIT

Mechanically speaking, the natural way humans walk is, generally, heel-toe. It makes more sense to assume our natural gait, the way we normally walk, unless there is specific evidence to suggest otherwise. If the heeled shoe was the hindrance demi-pointe lungers believe it to be, if it so affected the typical way humans move, then we might expect the masters to address it; the fact that they do not is not proof, but it is highly suggestive. Given the concern many of these masters displayed over terrain, it follows that if the heeled shoe were an added impediment then it would have been worth a mention. Not one of the masters I have examined touches on it.

Scientific examination of locomotion has established that humans are designed to walk and have long walked heel-toe.[15] Normal human ambulation, sometimes referred to as "sagittal plane gait," consists of striking the ground heel first. This is followed by several phases from a shift in load to distinct motions in the swing of the leg as it goes to step, and then the pattern repeats.[16] The heel, ankle, and forefoot act together as a rocker mechanism. First in sequence is the heel which acts as a fulcrum to distribute the weight falling on the foot. As the foot flattens, this section of the foot helps keep momentum for moving forward. Second, the ankle moves the tibia over the stationary foot. Third, the forefoot rocker helps raise the heel as the body comes forward and preps one for the next step.[17]



This is not to say that humans only move this way; in dance and in many martial arts, for example one may be on the toes or the balls of the feet. We often move differently in shoes than we do barefoot. More often than not we change how the foot lands depending upon the activity. Fencing is no exception. Within living memory there are still vestiges of different methods of moving in Olympic fencing (e.g. the *passata sotto*). These are variations, however, in normative movement. There is nothing

[15] See especially Carl W. Chan, MD, and Andrew Rudins, "Foot Biomechanics During Walking and Running," *Mayo Clinic Proceedings* 69 (1994): 448-461; T. Schmeltzpfenning and T. Brauner, "Foot Biomechanics and Gait," *Handbook of Footwear Design and Manufacture*, Woodhead Publishing Series in Textiles, Amsterdam, NL: Elsevier 2013, 27-48. A number of factors affect our gait, from how we are taught to walk to occupation, but in normative gait is heel-toe. For a useful introduction, see https://www.physio-pedia.com/Gait

[16] See E. Ayyappa, "Norman human locomotion, Part 1: basic concepts and terminology," in *Journal of Prosthetics and Orthotics* 9: 1 (1997): 10-17; D.A. Winter, *Biomechanics and Motor Control of Human Movement*, 4th ed., New Jersey: John Wiley and Sons, 2009).

[17] E. Ayyappa, "Norman human locomotion, Part 1: basic concepts and terminology," summary page 17. See page 16 and illustration 11 page 15.

in the vast literature we possess in fencing treatises to suggest that one's foot lands abnormally either on the step or in the lunge. Where the works on smallsword, to name one example, are specific they suggest one land flat-footed or that the foot barely skim the ground (see Part 1). Had the shoe or boot of the time required one to land abnormally some mention or suggestion of this would likely appear in the sources. On its own, this omission is not proof that one landed heel-toe, but it is highly suggestive that one was not required to land demi-pointe.

Experiments in period shoes today tend to confirm a normal gait while fencing. One *can* land demi-pointe, but adopting the shorter lunge in these works means one does not have to. If one has fought on grass, gravel, dirt, or cobblestone, then one knows how important a sure footing is, and how challenging it can be. One can lunge with a heel on one's shoe much as one does with a flat sole, but naturally one is more careful; the lunge is shorter, the foot more likely to land flat if the ground is slippery. No doubt an additional reason for leaning into the thrust from guard when possible versus lunging (cf. de Liancour, 1686) was that it put one at less of a risk for falling. So, if anything, landing flat-footed might make sense in some contexts, particularly on questionable terrain, but the shorter range of the smallsword lunge, the back-weighted on-guard position, and the emphasis on proper lunging distance also work toward less instability when attacking on poor ground.[18]

Court shoes, ca. 1780-1800, French; The MET

[18] The heel-toe lunge taught today is likely an artifact of the salle—while it works out of doors, one can slip far more easily than landing flat-footed. The earliest mention of it that I've found (so far) is in Brevet Major Henry C. Wayne, *The Sword Exercise arranged for Military Instruction* (Washington: Gideon and Co., 1850), 14-15. Much of the smallsword corpus suggests landing with a flat foot.

Men's shoes, ca. 1650-1700, Italian; Museum of Fine Arts, Boston; via Pinterest

Of note, while some of the modern studies on athletic footwear recommend a change in design for fencing shoes, they also state that the difference between a flat-soled fencing shoe and a heeled-running shoe, while it might dampen the shock of the foot as it lands, was not as significant as they initially expected.[19] Moreover, "load was predominantly placed on the heel of the leading foot and on the forefoot of the trailing foot during performance of a lunge and advance."[20] These are modern studies, however the conclusions these researchers have shared are still instructive. If a major argument for the demi-pointe lunge is that impact is less severe than it is on the heel, this data gives that notion the lie. On the one hand, natural human gait does not place the toes first. Second, studies on the impact to the limbs and the role of footwear both reveal that our gait is engineered to reduce shock and that footwear, while it can play a role in softening the drop of the foot to ground, is less significant than technique. Arguably, the degree of harm modern, high-level athletes incur in their years of participation in the sport far outstrip the average training and time in combat of period fencers. Outside of masters and their provosts few people in the 18th century likely spent as much time fencing as modern recreational fencers, never mind professional athletes.

Demi-pointe lunge enthusiasts who believe landing on the balls of the feet is more mechanically sound may also have misunderstood how a heel-toe landing in a lunge works. It is not a step that crashes from on high onto the poor heel, but as some of the masters covered in Part 1 made plain, and as traditional instructors do today, the foot skims forward just over the ground. This greatly reduces the impact. I suspect that in an effort to separate themselves from the sport crowd, and perhaps misreading some images in the manuals (over what these same manuals say), they devised the demi-

[19] Andrew Greenhalg, et al., "Influence of Surface on Impact Shock Experienced During a Fencing Lunge," *Journal of Applied Biomechanics* 29: 4 (2013), 463-467; B.M. Nigg and B. Segesser, "Biomechanical and Orthopedic Concepts in Sport Shoe Construction," *Medicine and Science in Sports Exercise* 24: 5 (1992), 595-602; Jonathan Sinclair and Lindsay Bottoms, "Tibial Shock Measured during the Fencing Lunge: The Influence of Footwear," *Sports Biomechanics* 9: 2 (2010), 65-71.
[20] Tony Lin-Wei Chen, et al., "Biomechanics of fencing sport: A scoping review," in *PLoS One* 12: 2 (2017): 17.

pointe lunge.[21] It allows, as Wilson claims in *The Arte of Defence*, for the knee to pass the foot, though why one should wish to do this or think it necessary remains a mystery.[22]

As a final point *in re* shoes and heel impact, researchers also discovered that fencers tend to favor the flat shoe as it conforms better to the kinematics of fencing, that is, facilitates the lunge as taught. A heeled shoe, for example, is less ideal for the longer lunge often employed today. The importance of this is that the lunge, historically, was often *shorter*, not only in order to keep one's footing on often unsuitable terrain, but also for reasons of safety. A long lunge puts one more at risk.

CONCLUSION

The science about normative human locomotion and a closer look at the role of footwear suggests that there is nothing in wearing a heeled shoe that debars one from making the lunge as it has come down to us, and importantly, as reflected in period sources. The mistake is assuming that the authors of smallsword texts advocated the length of the modern Olympic lunge. The duelist and competitor have different goals and different frames of mind when fighting. The competitor is unafraid; nerves aside, there is no fear of being injured or killed, and thus this fencer can take risks that the duelist cannot, including a long lunge. The duelist, on the other hand, is hesitant, as or more concerned about doubling when attacking as reaching target, and thus must be more circumspect in movement. It is not an accident that the lunge in smallsword was shorter.

Conclusions of this Study: Parts 1-3

This three-part study demonstrates that proponents of the demi-pointe lunge have little to no support for the demi-pointe lunge. The masters of our early modern fencing corpus did not recommend that one land on the toes. The images and illustrations in these treatises so often cited by demi-pointe lungers have been misinterpreted, or, evaluated without the accompanying text explaining those images. Corroborating works, most especially from period dance manuals, likewise do not indicate more than a shared culture and some vocabulary. Dance and fencing were often paired because masters often taught both, and, both were considered refinements appropriate for the echelon of society able to pay these masters for their tuition. Lastly, there is nothing in human locomotion or our choice of footwear that forces one to land demi-pointe on the lunge in order to preserve the knee or any other section of the leg.

In the early years of Western Martial Arts, a movement that in many respects grew quickly thanks to growing disaffection with the excesses in Olympic fencing in the 1990s, many fencers were keen to distance themselves from the FIE, USFA, and competitive fencing. It is possible that this odd interpretation of the lunge arose out of both a misreading of the sources and a strong desire to differentiate what historical fencers were doing from their misguided cousins. The idea of the demi-pointe lunge, wherever and whenever it started, has remained with us likely thanks to the power of micro-lineages and loyalty to one's instructors. It is normal for fencers to take their instructors at their word, and so most if not all people adhering to this theory have done so in good faith.

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[21] In 2017, Roland Warzecha/Dimicator, shared a video (now unavailable publicly) sharing his thoughts on "medieval walking." Much as I respect Roland, his interpretation here is deeply flawed—the science of walking aside, it is clear he has misread the images he cites for evidence. I touched on this in a lecture delivered at The Thundermark Deed, an armored combat event, 30 March, 2019.

[22] Wilson, *The Arte of Defense*, California: Createspace Independent Publishing Platform, 2013, 105.

Despite the amount of time I have spent on this rather dry topic, I have little to no reason to believe that these examinations will put the demi-pointe lunge concept in the grave. Given the choice between what an esteemed instructor and some obscure fencer thinks most fencers will, understandably, back their teachers. If I have hopes for this extended study it is two-fold. First, I hope my fellow instructors in historical fencing will read it and consider it soberly. We are all beholden to our students, to one another, to the community at large, and to future fencers to do our level best to derive as accurate an interpretation as we can. Just as I encourage my colleagues to read this study, so too do I request that they share with me any information I may have missed, any errors, and any suggestions. I will consider any well-reasoned request. Second, I offer this study to those, like me, who from time to time, are asked about landing demi-pointe on the lunge. This three-part study will, I hope, offer some ammunition and support for a more historically tenable position.