

Talk No 13a Reflexes and habits

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1. Last time I began to tell you about how muscular activities can be divided into three categories, depending on they are controlled by the central nervous system. These categories are
 - Reflex
 - Habitual
 - Voluntary
2. I started with reflexes and said there was quite bit of ambiguity about how the word is used. So it is not surprising if you find yourself a bit confused.
3. In an ideal world we would avoid the word as AT teachers but it is used a lot and I think we need to understand it.
4. I gave you a very strict scientific definition which was used by Sir Charles Sherrington and Rudolf Magnus whom we will be looking at later.
5. For them and lots of other scientists, a reflex is an innate set of automatic muscular responses which govern a high proportion of our basic activities. We pull our finger away from something hot; we jerk our knee in the patellar reflex, we stiffen into the startle pattern, we automatically begin to stand, sit and walk when we are babies and so on.
6. We had a clear and convincing demonstration of the pinna reflex by our demonstrator Ziggy.
7. So now let us have a look at our voluntary acts. These are things we decide to do and then do. We do not have any built-in guidance on how to them.
8. We have to learn how to write, how to use a knife and fork, how to brush our hair, how to do nearly everything we do. Some of us never learn to do things that other people learn easily.
9. We learn our voluntary acts in a variety of ways. Conscious or unconscious imitation combined with trial and error is certainly the most common in the early years of life. Even tiny children are the most extraordinary mimics and are always trying to copy what they see people doing.
10. People also learn by following the direct instructions of parents, friends, teachers or trainers. Instructional books and

videos play their part. Most age groups and societies have their role models for different activities.

11. With repetition, many of these learned actions become completely automatic. They happen without any thought on our part. This is especially true of things we have learned by imitation and have never thought about.
12. These are what we call habits. A habit is a learned response to a stimulus and it takes place without any conscious thought.
13. This is where we get quite a bit of confusion with reflexes, especially when we are talking about sports.
14. A goal-keeper saves a point-blank shot at goal and sports commentators and journalists talk of a reflex save. Top tennis players are able to return a hundred-mile-an-hour service, or sprint athletes are able to get out of their starting blocks in a tenth of a second.
15. We also see similar quick reactions when a person reaches out quickly to stop their pint of beer falling in a pub, or someone suddenly slams on the brakes in a car to avoid an accident. We say they showed fast reflexes.
16. The feature of these actions, which they share with reflexes, is that they bypass conscious thought. If you start to think about what you are going to do, the moment will have passed and it will be too late.
17. The beer will be all over the floor, the tennis ball will have passed you or the other runners will be ten metres up the track while you're saying to yourself, "*Better do something about this – time I got moving.*"
18. But even though they have many similarities with reflexes, these are not reflexes in the Sherringtonian sense. No one is born with these abilities. They have to be learned. Some people may be able to learn them more quickly than others and some may not be able to learn them at all. But no one is born with the ability to deal with hundred mile-an-hour tennis services.
19. To be able to do the amazing things that sports people do, they have to spend extraordinary amounts of time practising how to return tennis services, catch fast-moving footballs, leap out of the blocks at the sound of the starter's gun and the rest of it.

20. After the necessary amount of practice, they will have learned whatever it is so thoroughly that it can be done without any conscious thought. They will have become habits.
21. Another instance of confusion over the term reflex is the so-called "conditioned reflex" made famous by the Russian scientist Ivan Pavlov.
22. When a dog sees or smells food, it shows an overall muscular interest and it automatically salivates. This is actually quite a complex reflex response. It involves both non-muscular glandular activity in producing the saliva and muscular activity in the jaws and the neck and elsewhere when it displays its interest in the food.
23. What Pavlov did was to associate the sight of food with the sound of a bell or some other signal. The bell would ring, the food would be presented, and the dog would salivate.
24. After repeating this procedure a number of times, Pavlov found that the dog began to associate the sound of the bell with the food and would salivate at the sound of the bell. This became known as a conditioned reflex.
25. This is, in fact, a learned response rather than a reflex. Dogs do not normally show the muscular and glandular responses to the prospect of food when a bell rings but Pavlov showed that they can be taught, or conditioned, to do so.
26. In normal life, the reflex system looks after an awful lot of our activity. We stay in balance, we walk, we sit and stand, we blink our eyes, we breathe, we lower our heads to go through a low doorway, all without any thought whatsoever.
27. Since the muscles which are used automatically by the reflex system are the same skeletal muscles that we use when we perform voluntary actions the brain can almost always intervene to override or interfere with our innate reflex ways of doing things.
28. This is why the doctor who is going to give you a tap below the kneecap always asks you to relax. If we think about what the doctor is going to do, we tend to tighten up our knee and the tap has little or no effect. We can override the reflex.
29. Just as reflexes look after a lot of our activity without any conscious awareness on our part, habits also allow us to go about a great deal of our life without using our consciousness. Whether it is walking down the street, how we get in and out of

a chair, how we sit at the computer, how we position ourselves on the starting blocks or how we run a marathon, we tend to do these things in the same way and without any conscious awareness.

30. Because we are unaware of them, habits often get a bad press and we can get the impression that most habits are bad. But habits, in fact, are essential to our daily lives and our existence would be virtually impossible without them.
31. If we think about it, we realise that most things we do we do without thinking about how we do them. Take the example of talking and how we rattle on in our mother tongue compared with how we have to struggle when we are trying to speak a new language. Compare the first time we use chopsticks with the way someone from China uses them.
32. The problem is not that habits as such are bad but that some of them can be harmful. Moreover, they are often superimposed on our reflexes and may have completely displaced or overridden them.
33. Our habitual way of sitting at the computer may be horribly damaging, we have developed a habit of clenching our fists when we are walking, we stand on one foot when we are waiting for a bus. We may have got into a habit of holding our head to one side, or of excessive blinking, or breathing in a peculiar way. We have allowed bad habits to override our reflexes.
34. Looking at the Olympic Games, as AT teachers, we will have noticed that even elite athletes can have damaging or inappropriate ways of doing their specialist things. They have developed bad habits of using themselves. You can see, for example, that some of them have a poor awareness of how they are letting their head flop around when they are running.
35. And of course even elite performers spend a lot of their time not doing their specialist things. When they are sitting or walking about, going about their daily lives many of them look a completely mess.
36. I remember being in Covent Garden and seeing the junior corps de ballet coming out of a building. The way those young girls were walking, with their feet turned out was extraordinary.
37. Because of the fact that, by definition, our habits bypass our conscious brain, it can be difficult for us to know exactly what we are doing. And even if we suspect we are not doing things

as well as they should be done, it is even more difficult for us to know what we should be doing instead, and how to change to it.

38. This is why we have specialist sporting coaches, trainers, music teachers and so on. In a whole range of activities,, specialised training is necessary if we are to reach the top. That is not to say that coaches are necessarily always right but in most specialised activities people cannot become good just by trial and error.
39. Whether we are elite sports-people or people with ordinary jobs and lives, we need a foundation in good use of ourselves in all those basic activities which make up the bulk of our daily activities. This includes sitting, standing, walking and generally getting on with things that people do.
40. Being fit, in the sense of having well developed muscles in certain areas, is not protection against falling into bad habits of using ourselves. As an AT teacher, you will often find that people who pride themselves on being fit can have quite damaging ways of using themselves.
41. I come across young actors, for example, who go to the gym several times a week and think of themselves as fit. But they cannot sit upright in a chair for more than a couple of minutes without having backache.
42. If we have not the basics of keeping our necks free, going up, lengthening and widening, being in balance, we will inevitably be using ourselves in ways that are to a greater or less extent inefficient and damaging.
43. There is plenty of work for us to do in getting our AT message across.
44. To finish with, I think it is worth looking at the way Alexander uses the word "*instinct*".
45. In normal scientific and everyday use this is usually used about animals and refers to a type of behaviour characteristic of the species. It is stereotyped and automatic but is generally more complex than the reflexes I have been talking about.
46. There are the sometimes very elaborate migratory and nest-building instincts in birds. There are burrowing instincts in rats, elaborate mating rituals and various types of group behaviour in different species of animals.
47. But Alexander has his own use of the word. In *Man's supreme inheritance* he says:

I define instinct as the result of the accumulated subconscious psycho-physical experiences of man at all stages of his development, which continue with us until, singly or collectively, we reach the stage of conscious control.¹

48. He repeats the same definition in *Constructive conscious control of the individual* as a footnote².
49. Not many modern evolutionary biologists would be happy with that definition. As we all know, Alexander had his little vaguenesses about evolution and these ideas are more like those of Lamarck (1744-1829), who predated Darwin and was superseded by him.
50. But luckily we do not need to worry about that because it does not affect the way we learn our trade or go about our work.
51. But it is another of those little oddities of Alexander's terminology that is worth bearing in mind that when we are thinking of how to relate the AT to our scientifically-minded pupils. I myself tend to avoid the word instinct completely when talking about our work.

REFERENCES

- F. M. ALEXANDER (1923) *Constructive Conscious Control of the Individual* - Mouritz, London 2004 edition
F. M. ALEXANDER (1910) *Man's supreme inheritance* - Mouritz, London (1996 edition)

¹ Alexander (1910)p140

² Alexander (1923) p3