Abstract

Introduction
Laughter has positive, quantifiable physiological and psychological effects on certain aspects of health. In the clinical setting, laughter interventions can be used with preventive intent (lifestyle medicine) or as a complementary or alternative therapeutic option to other established therapeutic strategies. Although the medical community has been reluctant to embrace and support laughter for health, laughter interventions are increasingly being implemented as a routine clinical practice in its therapeutic portfolio. However, the therapist will have to know, understand and manage the various techniques available to experience positive emotions (including hilarity-humour) and types of therapeutic laughter (spontaneous, simulated and stimulated). This review discusses laughter techniques for therapeutic use in medicine.

Discussion
A therapeutic laughter intervention usually consists of a minimum of three stages: (a) opening and warm-up; (b) experiencing laughter and (c) recovery, evaluation and closure. Breathing; facial and body gymnastics; laughter placing, introduction and releasing techniques are used in the beginning of each laughter intervention, both as a mental/physical warm-up and as a disinhibition practice. Within the experiencing stage, spontaneous laughter is mainly derived from any kind of playing, clowning, dancing, movement, humour and emotional contagion techniques; simulated laughter is mostly elicited through specific exercises and gymnastics (i.e. laughter yoga) and stimulated laughter is primarily generated by physical contact and sense stimulation (tickle, massages, hugs other techniques). To end a laughter session, floor laughter exercises, grounding techniques, feedback and evaluation are usually employed.

Conclusion
Unlike other therapies which are more time-consuming, committed or expensive, laughter techniques can be easily implemented and cost-effective in traditional clinical settings for health and patient care.

Introduction
Positive emotions, humour, laughter and health
Laughter is one of the most frequent and appealing responses to humour (hilarity) and many other positive emotions. In everyday language, there is little agreement and much confusion in the application of humour and laughter terminology, which is compounded by the many nuances and meanings imposed by different languages. For our purposes, humour is defined as one of the stimuli that can help us to laugh and be happy. Sense of humour is a psychological trait that varies considerably and can respond to different types of humorous stimuli. Laughter is a psycho-physiological response to humour or any other favourable external or internal stimuli (positive emotions, pleasant thoughts, self-induced laughter or by their spreading, etc.) whose external characteristics are: (a) strong contractions of the diaphragm accompanied by repetitive syllabic vocalisations, typically heard as 'ha, ha' or 'ho, ho', (b) characteristic facial expression, (c) body movements and (d) a series of associated neurophysiological processes. Internally, laughter is associated with an identifiable positive emotion (hilarity, others). Consequently, humour and laughter are different events (though often related). While humour is a stimulus and can occur without laughter, laughter is an emotion/response and can occur without humour.

The biomedical literature available to date supports different indications and health benefits of humour/laughter therapy\(^1\text{-}^4\), which depend not only on the expression of laughter itself but also on the underlying positive emotions (hilarity-humour, joy, euphoria, fun, well-being, optimism, satisfaction and many others). Laughter may have both preventive and therapeutic values\(^5\). As a result, more health professionals are increasingly beginning to implement laughter interventions as a routine clinical practice in their therapeutic portfolio, both individually and in groups. The aim of this review was to discuss the different laughter techniques for therapeutic use in medicine.

Discussion
Types of therapeutic laughter
Any intervention with humour/laughter is only of therapeutic value in the hands of a professional specialist or therapist. Hence they must constantly ensure their integrity and scientific rigour, the main vision and mission of the health professionals who belong to this discipline. There are probably many forms of laughter as individual differences and potential moods. Any kind of laughter has not been reported as more therapeutic than another, and in general all are
usually adequate in the different age groups and in different conditions and clinical settings.6–8 However, therapeutic laughter must include a combination of body, mind and be willing and can be lumped into the following groups: (a) genuine or spontaneous laughter; (b) simulated laughter and (c) stimulated laughter. Spontaneous laughter, unrelated to one’s own free will, is triggered by different (external) stimuli and positive emotions. It has been reported that spontaneous laughter causes typical contractions of the muscles around the eye socket (Duchenne laughter/smile).9 Simulated laughter is triggered by oneself at will (self-induced), with no specific reason (purposeful, unconditional), and therefore not elicited by humour, fun, other stimuli or positive emotions.10 And stimulated laughter happens as a result of the physical contact or action (reflex) of certain external stimuli (i.e. to be ticklish, by pressing laughter bones11).

Health-related benefits of laughter are mainly reported from (humour-induced) spontaneous laughter interventional studies, although preventive and therapeutic values of laughter would concern in particular the first two types, spontaneous laughter and simulated laughter, and to a lesser extent stimulated laughter. While the human mind can make a distinction between simulated and spontaneous laughter, the human body cannot; therefore, their corresponding health-related benefits are alleged to be alike provided the simulated laughter is done with a minimum of enthusiasm (‘motion creates emotion’ theory). Indeed, simulated laughter may lead to a higher ‘laughter exposure’ both by achieving greater intensity and duration at will or by triggering contagious and turning into spontaneous laughter, which might create greater accompanying psychophysiological changes.12 As a therapeutic laughter type, simulated laughter is currently a growing field of scientific research and getting increasingly popular worldwide since it is the foundation of the Laughter Club movement (Laughter Yoga).13

**Gender differences in the use of therapeutic laughter**

Although several studies have reported that women laugh more than men do, the daily frequency of laughter does not seem to differ (mean = 17.5 laughs).14 Laughter in all its forms and manifestations is an indicator of family vitality and healthy couples. Laughter is very attractive at the interpersonal level, especially for women. Men use much more humour and laughter when it comes to discussing sensitive health issues. In women, laughter would be more associated with greater social support in relationships and as a tool to cope with stress. Inviting laughter in the doctor’s office may be very useful when directing certain messages on therapeutic management. Taking into account possible gender differences in the use of therapeutic humour and laughter (Table 1) may help improve the relationship with the patient and optimise interventions in the clinical setting.15

**Therapeutic laughter techniques in medicine**

Once it has been estimated that a laughter intervention may be indicated for an individual or a group, its effective use for preventive or therapeutic purposes needs to be learned and practiced as any other medical strategy. While laughter medicine takes skill and time to be developed, laughter therapy itself can be easily implemented and cost-effective in patient care.16–18 Health care professionals do not have to be stand-up comics, clowns or magicians to bring laughter into clinical settings. Nevertheless, practical guidelines or further advice are needed to help health care professionals (and others) know and implement these techniques in their health care portfolio. In particular, a unique and comprehensive handbook on simulated laughter exercises and a companion book on FUN-damentals19,20 are already available, and a ‘Handbook on Laughter Medicine and Therapy’21 is, to our knowledge, the first one published specifically on this subject.

Modern laughter interventions comprise a set of techniques (applicable to a person or a group) that lead to a controlled state/feeling of lack of inhibition in experiencing positive emotions, humour and (spontaneous, simulated or stimulated) laughter that translate into the health benefits mentioned above. Depending on the preventive/therapeutic aims, the therapist will have to know, understand and manage the various techniques available to experience positive emotions (including hilarity-humour) and spontaneous, simulated and stimulated laughter, described in the following sections. There is no need for costly equipment, mats or special clothing. Participants choose their level of involvement, from gentle to vigorous, and laughter techniques are suitable for all ages and all levels of ability.

To achieve significant health effects, laughter needs to be of sufficient duration. An occasional chuckle is a good practice but does not lead to the desired results. Each individual laughter session within a laughter medicine has to ensure that ‘intense laughing out loud’ can be experienced either alone or in groups, supported with abdominal pressure and appropriate breathing, for at least 3 min in total per session. In the absence or inability to self-experience sound or audible laughter, ‘silent laughter’ may be practiced with similar intensity and duration. Alternatively, ‘receptive or passive laughter’ may be watched or listened to from other laughers. Laughter is universally well tolerated, with very limited side effects. Contraindications are almost non-existent, although caution is advised in patients with certain health conditions, such
as recent surgery, heart disease or glaucoma. In either case, laughter is not indicated when it involves clear discomfort or additional pain.

Although there would be no single or universal pattern, a typical laughter session usually consists of a minimum of three stages: (a) opening and warm-up; (b) experiencing positive emotions, humour and laughter and (c) recovery, closure and evaluation. The minimum duration of an individual session is 20 min (with a recommended maximum of 2 h), and there should be a minimum of two sessions per week during a total of at least 8 weeks. After the recommended first 8 weeks, the results of the laughter intervention are evaluated on an individual basis (therapeutic response depending on the initial conditions) and the appropriateness of extending it considered as a consequence.

Therapeutic laughter techniques for the opening and warm-up stage

Alone or in groups, the following laughter techniques are to be performed at the beginning of any laughter session due to their ability to help dissolve inhibition, release of laughter and as a warm-up practice for the upcoming laughter experience stage.

**Breathing techniques and phonorespiratory coordination**

Breathing is one of the most important aspects of education, care and preparation for any kind of laughter sessions. It is essential because laughter must be sustained on the expiration with the help of the diaphragm and abdominal muscles (diaphragmatic breathing). Inspiration should be nasal while dilating the nostrils, and enough to take the extra air necessary for audible laughter. To suit phonation, the expiration time should achieve proper breath, stress-free and will. Breathing rate needs also to be trained to fully reach phono-respiratory coordination. There are numerous exercises to enhance nasal breathing, knowledge and practice of diaphragmatic breathing and phono-respiratory coordination, which in themselves are also generating laughter.

**Facial and body gymnastics**

Laughter is usually accompanied by an explosion of facial and bodily movements which should not be restrained when laughing. By training several muscles through different gymnastics, laughter can be generated, imitated or simulated with the same movements that are made to laugh. To serve this purpose, several exercises are designed to play faces and gestures that are fun and funny, and to practice shaking, stretching, twisting, jumping, bending, tumbling and other bodily movements, according to individual levels of ability. If done in a group, eye contact is very important to strengthen laughter contagion and effectiveness.

**Laughter warm-up techniques**

Through larynx massaging exercises, relaxation and warm-up techniques, breathing is optimised, vocal apparatus is prepared and laughter is ready to be properly brought out.

**Placing, intonation and rhythm techniques**

As with the voice, there would be three basic tones for laughter: low, medium, higher. Unvoiced laughter is frequently alternated with voiced laughter (puffs, whistles, growls, roars).

### Table 1: Women and men’s laughter: main differential characteristics

<table>
<thead>
<tr>
<th>Laughter</th>
<th>Women</th>
<th>Men</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Acoustic structure</strong></td>
<td>Voiced laughter predominates (‘ha-ha-ha’, and other vowels)</td>
<td>Unvoiced laughter is frequently alternated with voiced laughter (puffs, whistles, growls, roars)</td>
</tr>
<tr>
<td><strong>Basal/maximum frequency</strong></td>
<td>Higher/up to four times over basal pitch (2000 Hz)</td>
<td>Lower/up to three times over basal pitch (1000 Hz)</td>
</tr>
<tr>
<td><strong>Risk of contagion/pleasantness to be heard</strong></td>
<td>Higher/lower</td>
<td>Lower/higher</td>
</tr>
<tr>
<td><strong>Conversational laughter</strong></td>
<td>More situational, modest and sensitive</td>
<td>More assertive, aggressive and biting (jokes, parodies)</td>
</tr>
<tr>
<td><strong>Laughing in public</strong></td>
<td>Less audible</td>
<td>More explosive and audible</td>
</tr>
<tr>
<td><strong>Laughing with one’s partner and family</strong></td>
<td>More crucial for a healthy relation and overcoming adversity</td>
<td>Less likely to get separated or divorced</td>
</tr>
<tr>
<td><strong>Interpersonal appeal</strong></td>
<td>They like men to make them laugh</td>
<td>They like women to appreciate their sense of humour and laughter</td>
</tr>
<tr>
<td><strong>Use in doctor’s office</strong></td>
<td>To enhance social competencies and for coping with stress</td>
<td>To improve communication and therapeutic management of sensitive/private health issues</td>
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Adapted from Mora-Ripoll.

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As with the voice, there would be three basic tones for laughter: low, medium, higher.
medium and high pitched. It is one's right tone, neither too low nor too high, when laughter is not being elicited with effort, failure or pain. Placing techniques help emit laughter while producing maximum performance (intensity of laughter) with minimum effort. Placing techniques also control laughter while avoiding neck and facial tension and laryngeal fixation. Proper laughter placing requires coordination between physical posture, relaxation, breathing and articulation. It is crucial to maintain the mouth floor relaxed (as if having a hot potato or croquette inside). Once the appropriate tone is achieved, placing and intonation techniques help create different laughter types and styles (see simulated laughter below) to experience all their health-related effects. The more variable laughter is, the more natural it is perceived and more positive emotional impact results in self and others. A well-modulated laughter is stimulating and evocative, whereas a dull monotone laughter can be a boring therapist. There are several exercises to practice laughter placing, intonation and rhythm which in themselves are also generating laughter. Spending a few minutes every session on perfecting each of these techniques will also lead to a more polished and professional delivery.

Laughter sounds
By blowing a raspberry, growling, howling and making other sounds (of animals, childhood, or funny or embarrassing situations), with much scandal, laughter is more easily triggered off, transmitted and experienced.

Laughter-releasing techniques
Some people feel their laughter as if blocked or captive and apparently cannot laugh. There are several exercises to help rescue laughter and burst out laughing when this happens.

Therapeutic laughter techniques for the experiencing stage
Table 2 summarises different techniques (list is not exhaustive) by which the therapist can generate spontaneous, simulated or stimulated laughter within the experiencing stage of any therapeutic laughter session. Now laughter itself is the main goal and all laughter techniques are aimed at experiencing its proper dose, duration and intensity at this point. Spontaneous laughter is mainly derived from any kind of playing, clowning, dancing, movement, humour and emotional contagion techniques. Simulated laughter is self-induced and mostly elicited through specific exercises and gymastics (i.e. laughter yoga). Simulated laughter techniques can also be introduced in the beginning of each laughter intervention, both as a mental/physical warm-up and as an unlock for experiencing laughter. The library of simulated laughter exercises is virtually infinite, and by considering many different possibilities, further exercises can be developed and added. Stimulated laughter is primarily generated by physical contact and sense stimulation (tickles, massages, hugs, others).

Therapeutic laughter techniques for the closing stage
Laughter is still present and significantly experienced at this point but progressively reduced to help return it to baseline levels. Although there are no general rules since this stage is usually highly therapist dependent, the following laughter techniques can be used to end a laughter session.

Floor laughter exercises
They are often the best part of any laughter session because this is when most people usually choose to ‘let go’ and truly laugh. Floor exercises are also supported and enhanced by stimulated laughter advantages (due to physical contact).

Grounding techniques
Among others, one of the most efficient grounding technique used is the humming bee breath. It can be done in any position and repeated a few times. The humming sound should be smooth, even and continuous for the duration of the exhalation, making the front of the skull reverberate.

Group prayers
Used for laughter, health, healing, harmony, love, peace, strength, wisdom and others.

Positive affirmations
Only positive and truly empowering statements should be chosen, not trying to be funny or even remotely entertaining.

Feedback, appreciation and evaluation
This is a good time to invite participants to share their experiences here or anything they would like to disclose, ask questions, make an announcement, thank whoever wanted, shake hands or hug.

Conclusion
To date, there is sufficient evidence to suggest that laughter has positive, quantifiable physiological and psychological effects on certain aspects of health. However, further well-designed research on various health-related outcomes is warranted. Nevertheless, the medical community is still very slow in accepting and considering laughter as a healing tool. In order to offer patients the benefits of laughter, health care professionals must be willing to break loose from conventional therapeutic constraints, regain their own laughter, and learn and use the techniques to facilitate laughter in their patients. Moreover, proponents of ‘positive psychology’ have identified humour and laughter as one of the 24 positive personal values and attributes. Hence, laughter interventions deserve...
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<th>Table 2</th>
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<tr>
<td><strong>Spontaneous laughter</strong></td>
<td><strong>Simulated laughter</strong></td>
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<tr>
<td>Emotional wellness</td>
<td>Physical contact</td>
</tr>
<tr>
<td>Tickle</td>
<td>Physical workout</td>
</tr>
<tr>
<td>Clowns</td>
<td>Cross-brain exercises; laughter exercises; laughing and singing exercises; empowering behaviours; group games; floor exercises; laughter competition; laughter and ideokinesis</td>
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<tr>
<td>Magic</td>
<td>Smells, tastes and colours</td>
</tr>
<tr>
<td>Emotional aims: (1) relaxation; (2) self-assurance; (3) communication and body language; (4) cooperation</td>
<td>Different therapeutic aims: (1) introduction and presentation; (2) relaxation; (3) self-assurance; (4) communication and body language; (5) cooperation</td>
</tr>
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<td>Costumes and masks</td>
<td>Special techniques</td>
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<td>They can blow fantasy, encourage creativity and disinhibition; allow the deployment of certain skills and enable the exploration of new patterns of social interaction</td>
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<tr>
<td>Theatre and mime</td>
<td>Spontaneous laughter</td>
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<td></td>
<td>They help foster relationships, promote disinhibition and can be a useful training resource to enhance tolerance and solidarity</td>
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</tbody>
</table>

| Music and song   | By singing in a makeshift karaoke; staging a musical (as a ‘play-back’) or rehearsing a choir with laughter sopranos and tenors | Laughter meditation | By alternating simulated laughter and being completely still and silent while sitting and/or lying down |

| Dance and movement | By improvising a choreography practice; performing bodily gymnastic exercises; just dancing or using optional auxiliary objects (a ball, balloon, rope, musical instrument, etc.) | Laughter yoga<sup>10</sup> | By combining breathing deeply and stretching, clapping in rhythm while chanting and performing simulated laughter exercises among the techniques listed above |

| Drawing, painting, sculpting, makeup | By recreating cheerful, funny and fun images, taking advantage of free combinations of shapes and colours | Computer laughter | Synthetised laughter, electronic affective mirrors (sensing and eliciting laughter), voice shapers, others |

| Language | By using tongue twisters; word games; storytelling; talks with nonsense words (‘gibberish’) or chained rhyme (hilarious poetry) |  | |

| Humour<sup>11,12</sup> | Jokes, funny videos and movies are the most commonly used |  | |

| Emotional contagion | Laughter is so contagious that spreads when laughing in company and having good eye contact |  | |
a special place in medical practice and daily life. Unlike other therapies which are more time-consuming, committed or expensive, laughter techniques can be easily implemented and cost-effective in traditional clinical settings for health and patient care. Alone or in groups, laughter techniques help dissolve inhibition and release of laughter, serve as a warm-up practice for the upcoming stages, and allow full therapeutic laughter experience at proper dose, duration and intensity. Laughter, along with other preventive and therapeutic interventions, is a sound prescription as a wonderful way to enhance health.

References
19. Gendry S. From 0 to laughter in 0.5 seconds. The indispensable handbook on simulated laughter exercises for better health and more joy 3rd ed. Los Angeles, CA: American School of Laughter Yoga; 2007.